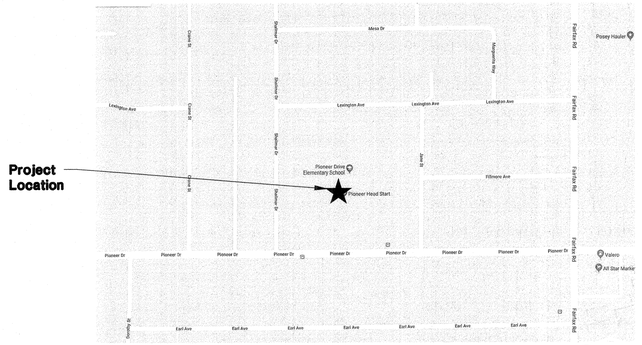
BAKERSFIELD CITY SCHOOL DISTRICT

CANOPY MOUNTED PV SYSTEM
PIONEER ELEMENTARY SCHOOL
PTN 63321-319



NOT TO SCALE

Client
Bakersfield City
School District
1300 BAKER STREET,
BAKERSFIELD, CA 93305

Structural Engineer
Timothy Jacquess, S.E.
TKJ Structural Engineering
9820 Willow Creek Road, Suite 455
San Diego, CA 92131
619-869-6234

Electrical Engineer
Collins Electric
Electrical Engineer: R.J. Hardin
1902 Channel Drive
West Sacramento CA. 95691
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FOREFRONT POWER
100 Montgomery Street # 1400
San Francisco, California 94104
(855) 204-5083

Architect & Engineers of Record
ATI Architects and Engineers
4750 Willow Road
Pleasanton, California 94588
(925) 648-8800 Fax: (925) 648-8811
Project Manager: Mark Bello
Architect of Record: Mark Bello

GENERAL NOTES

1. ALL MATERIAL AND WORKMANSHIP SHALL CONFORM TO THE CURRENT EDITION OF THE CALIFORNIA BUILDING CODE, CMC, CPC, CEC AND ALL APPLICABLE LOCAL CODES, ORDINANCES, AND STATE AMENDMENTS.

2. THE CONTRACTOR SHALL CHECK ALL DRAWINGS IMMEDIATELY UPON THEIR RECEIPT AND SHALL VERIFY ALL DIMENSIONS AND SITE CONDITIONS BEFORE STARTING WORK. ATI ARCHITECTS AND ENGINEERS SHALL BE NOTIFIED OF ANY DISCREPANCIES.

3. NO STRUCTURAL MEMBER SHALL BE CUT OR NOTCHED UNLESS SPECIFICALLY SHOWN, NOTED, OR APPROVED BY ATI. NOTCH DETAILS, IF PROVIDED ARE FOR GENERAL GUIDANCE ONLY. ATI SHALL BE CONTACTED TO APPROVE LOCATIONS OF PROPOSED NOTCHES.

4. CONNECTIONS AND IMPLIED CONSTRUCTION ASSEMBLIES THAT ARE NOT SPECIFICALLY DESCRIBED OR DETAILED SHALL BE CONSTRUCTED USING STANDARD CONSTRUCTION PRACTICES IN COMPLIANCE WITH THE GOVERNING CODES AND ORDINANCES.

5. WHEN DETAILS LABELED "TYPICAL" OR "SIMILAR" ARE GIVEN ON DRAWINGS, THE CONTRACTOR SHALL APPLY THE INTENT OF THE DETAIL TO THAT SPECIFIC CONDITION.

6. WRITTEN INFORMATION AND DIMENSIONS SHALL TAKE PRECEDENCE OVER GRAPHIC INFORMATION. DO NOT SCALE DRAWINGS.

7. DRAWINGS AND SPECIFICATIONS FOR THIS WORK HAVE BEEN PREPARED IN ACCORDANCE WITH GENERALLY ACCEPTED STANDARDS OF PRACTICE TO MEET THE MINIMUM REQUIREMENTS OF THE CURRENT EDITION OF THE CBC. ANY OMISSIONS OR DISCREPANCIES ON THE PLANS OR ANY DEVIATIONS FROM THE PLANS WHICH ARE NECESSITATED BY FIELD CONDITIONS OR ANY CONDITION DIFFERENT FROM THOSE INDICATED ON THE PLANS SHOULD BE BROUGHT TO THE ATTENTION OF ATI PRIOR TO CONTINUING CONSTRUCTION. ALL WORK IS TO BE COORDINATED SO THAT COOPERATION BETWEEN THE TRADES WHERE REQUIRED IS ACCOMPLISHED.

8. CONTRACTOR AND SUBCONTRACTORS ARE RESPONSIBLE FOR THE ORDER AND MEANS OF CONSTRUCTION AND ALL TEMPORARY BRACING AND ERECTION DURING CONSTRUCTION.

9. APPROVALS BY BUILDING INSPECTORS SHALL NOT CONSTITUTE AUTHORITY TO DEVIATE FROM THE PLANS AND SPECIFICATIONS.

10. ALL WORK TO CONFORM TO TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)

PROJECT CODE SUMMARY & REGULATIONS

AS A FACILITY WHICH COMES UNDER THE APPROVAL AND AUTHORITY OF THE DIVISION OF THE STATE ARCHITECT (DSA), THIS PROJECT IS SUBJECT TO DRAWING AND JOB SITE REVIEW BY A REPRESENTATIVE OF DSA.

ADMINISTRATIVE REQUIREMENTS (PARTIAL LISTING ONLY FROM CHAPTER 4, PART 1, TITLE 24, C.C.R.):

1. A COPY OF PARTS 1 TO 5, TITLE 24, C.C.R. AND ALL SECTIONS OF THE CALIFORNIA BUILDING CODE (2 VOLUMES) SHALL BE KEPT ON THE SITE AT ALL TIMES.
2. ALL CONSTRUCTION CHANGE DOCUMENTS (CCD) PER DSA IR A-6 TO BE SIGNED BY THE ARCHITECT OF RECORD AND THE OWNER AND APPROVED BY DSA AND ARE NOT VALID UNTIL APPROVED BY DSA PER SECTION 4-338, PART 1, TITLE 24.
3. DSA SHALL BE NOTIFIED AT THE START OF CONSTRUCTION AND PRIOR TO THE PLACEMENT OF CONCRETE PER SECTION 4-331, PART 1, TITLE 24.
4. A DSA CERTIFIED PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, (PART 1, TITLE 24, CCR). INSPECTION SHALL BE IN ACCORDANCE WITH SECTION 4-333(b), PART 1, TITLE 24. THIS PROJECT REQUIRES A CLASS 2 INSPECTOR IN ACCORDANCE WITH CBC.
5. SUPERVISION OF CONSTRUCTION BY DSA SHALL BE IN ACCORDANCE WITH SECTION 4-334, PART 1, TITLE 24.
6. CONTRACTOR, INSPECTOR, ARCHITECT OF RECORD AND ENGINEERS SHALL SUBMIT VERIFIED REPORTS (FORM DSA-6) IN ACCORDANCE WITH SECTION 4-336 AND 4-343, PART 1, TITLE 24.
7. THE ARCHITECT OF RECORD AND THE STRUCTURAL ENGINEER SHALL PERFORM THEIR DUTIES IN ACCORDANCE WITH SECTION 4-333(a) AND 4-341, PART 1, TITLE 24.
8. 8. THE CONTRACTOR SHALL PERFORM HIS DUTIES IN ACCORDANCE WITH SECTION 4-343, PART 1, TITLE 24.
9. THE INTENT OF THESE DRAWINGS AND PROJECT MANUAL IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. UPON DISCOVERY OF NON-COMPLYING EXISTING CONDITIONS NOT ADDRESSED BY THE CONTRACT DOCUMENTS AND AFFECTING COMPLIANCE OF FINISHED WORK, A C.C.D. OR SEPARATE SET OF CONSTRUCTION DOCUMENTS ADDRESSING THE NECESSARY REMEDIAL SCOPE OF WORK SHALL BE SUBMITTED TO AND APPROVED BY THE OWNER, CLIENT, ARCHITECT, AND DSA BEFORE PROCEEDING WITH THE WORK.
10. ALL TESTS TO CONFORM TO THE REQUIREMENTS OF SECTION 4-335, PART 1, TITLE 24 AND APPROVED T & I.
11. TEST OF MATERIALS AND TEST LABORATORY SHALL BE IN ACCORDANCE WITH SECTION 4-335, PART 1, TITLE 24. THE SCHOOL DISTRICT SHALL EMPLOY AND PAY THE LABORATORY.
11. COMPLIANCE WITH CFC CHAPTER 33, FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION AND CBC CHAPTER 33, SAFETY DURING CONSTRUCTION WILL BE ENFORCED.

APPLICABLE CODES

CALIFORNIA BUILDING STANDARD, ADMINISTRATION CODE, TITLE 24, PART 1, 2016 EDITION W/CA AMENDMENTS
CALIFORNIA BUILDING CODE, TITLE 24, PART 2, VOLUME 1, 2016 EDITION W/CA AMENDMENTS
CALIFORNIA BUILDING CODE, TITLE 24, PART 2, VOLUME 2, 2016 EDITION W/CA AMENDMENTS
CALIFORNIA ELECTRICAL CODE, TITLE 24, PART 3, 2016 EDITION W/CA AMENDMENTS
CALIFORNIA MECHANICAL CODE, TITLE 24, PART 4, 2016 EDITION W/CA AMENDMENTS
CALIFORNIA PLUMBING CODE, TITLE 24, PART 5, 2016 EDITION W/CA AMENDMENTS
CALIFORNIA ENERGY CODE, TITLE 24, PART 6, 2016 EDITION W/CA AMENDMENTS
CALIFORNIA FIRE CODE, TITLE 24, PART 9, 2016 EDITION W/CA AMENDMENTS
CALIFORNIA REFERENCED STANDARD CODE, TITLE 24, PART 12, 2016 EDITION
TITLE 19, CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS
CSFM SOLAR PHOTOVOLTAIC INSTALLATION GUIDE
DSA IR 16-8
DSA 118-9
GROUNDING PER CEC ARTICLE 250
CEC ARTICLE 690
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

APPLICABLE STANDARDS/REGULATIONS
REF. CODE SECTION: NFPA STANDARDS-2016 CBC (SFM) CHAPTER 35, 3504.1
CONSTRUCTION SAFETY (CAL-OSHA): CCR TITLE 8
RULES AND REGULATIONS OF THE LOCAL TELEPHONE COMPANY
RULES AND REGULATIONS OF THE LOCAL UTILITY COMPANIES:
PACIFIC GAS AND ELECTRIC COMPANY

STATEMENT OF GENERAL CONFORMANCE

☑ THE DRAWINGS OR SHEETS LISTED ON THE COVER OR INDEX SHEET ◇

☐ THIS DRAWING, PAGE OF SPECIFICATIONS/ CALCULATIONS

HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/ OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:

1, DESIGN INTENT AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS AND PROJECT SPECIFICATIONS PRPEARED BY ME, AND

2. COORDINATION WITH MY PLANS AND SPECIFICATIONS AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES, AND RESPONSIBILITIES UNDER SECTIONS 17302 AND 81138 OF THE EDUCATION CODE AND SECTIONS 4-336, 4-341 AND 4-344" OF TITLE 24, PART 1. (TITLE 24, PART 1, SECTION 4-1317 (b)).

SIGNATURE	07/27/018 DATE
MARK S. BELLO PRINT NAME	
C 20677 LICENSE NUMBER	Mar. 31, 2019 EXPIRATION DATE

SCOPE

INSTALLATION OF CANOPY MOUNTED PV PANELS
(4) CANOPY STRUCTURES AND ASSOCIATED GROUND MOUNTED EQUIPMENT

ESTIMATED CONSTRUCTION COST: $599,969.24

DEFERRED ITEMS: NONE

ABBREVIATIONS

@	AT	ELEV.	ELEVATION	PR.	PAIR
A.B.	ANCHOR BOLT	E.J.	EXPANSION JOINT	PSI	POUNDS PER SQUARE INCH
ADD'L	ADDITIONAL	EMBED.	EMBEDMENT	P.T.	PRESSURE TREATED
AGG.	AGGREGATE	EXT.	EXTERIOR	RECOM.	RECOMMENDATIONS
ALT.	ALTERNATE	FDN./FOUND.	FOUNDATION	REINF.	REINFORCING
ALUM.	ALUMINUM	FLUOR.	FLUORESCENT	S.A.D.	SEE ARCHITECTURAL DRAWINGS
AMP.	AMPERAGE	FTG.	FOOTING	S.C.	SOLID CORE
APPROX.	APPROXIMATE	GA.	GAUGE	S.C.D.	SEE CIVIL DRAWINGS
BLK'G/BLKNG	BLOCKING	GALV.	GALVANIZED	SCHED.	SCHEDULE
BM.	BEAM	G.F.C.I.	GROUND FAULT CIRCUIT INTERRUPTER	SD	SMOKE DETECTOR
BTM./BOTT.	BOTTOM	GIR.	GIRDER	S.E.D.	SEE ELECTRICAL DRAWINGS
BTWN	BETWEEN	G.S.M.	GALVANIZED SHEET METAL	S.F./SQ.FT.	SQUARE FOOT
CALCS.	CALCULATIONS	HORIZ.	HORIZONTAL	SHR.	SHEAR
C.I.	CAST IRON	HR.	HOUR	SIM.	SIMILAR
CJ	CONTROL JOINT	INFO.	INFORMATION	S.S.D.	SEE STRUCTURAL DRAWINGS
CLG.	CEILING	JST.	JOIST	SQ. IN.	SQUARE INCH
C.M.U.	CONCRETE MASONRY UNITS	LB. OR #	POUND OR NUMBER	SYM.	SYMBOL
COL.	COLUMN	LEV./LVL.	LEVEL	T.O.C.	TOP OF CURB
CONC.	CONCRETE	LT.	LIGHT	T.O.S.	TOP OF SLAB
CONT.	CONTINUOUS	LTWT.	LIGHTWEIGHT	TYP.	TYPICAL
CONTR.	CONTRACTOR	MAX.	MAXIMUM	U.N.O.	UNLESS NOTED OTHERWISE
C.P.	CONTROL POINT	MFR.	MANUFACTURER	UTL./UTIL.	UTILITY
DBL.	DOUBLE	MIN.	MINIMUM	VERT.	VERTICAL
DET.	DETAIL	(N)	NEW	V.I.F.	VERIFY IN FIELD
DEG.	DEGREE	NAT.	NATIONAL	W.	WALL
DIA.	DIAMETER	N.I.C.	NOT IN CONTRACT	W.P.	WEATHER PROOF
DIAPH.	DIAPHRAGM	NOM.	NOMINAL	W.W.F.	WELDED WIRE FABRIC
DN.	DOWN	N.T.S.	NOT TO SCALE	W.W.M.	WELDED WIRE MESH
(E)	EXISTING	O.C.	ON CENTER	W.	WIDE
EA.	EACH	PL.	PLATE		
ELECT.	ELECTRICAL				

SYMBOLS

- X / XX — NOTE — DETAIL NUMBER / NOTES / DETAIL SHEET
- X / Y — ELEV LETTER / ELEV SHEET
- X / Y — BUILDING SECTION LETTER / BUILDING SECTION SHEET
- 1 — GRID LINE INDICATION
- X / XX — REFERENCE ITEM / SHEET NUMBER
- 1 — REVISION NUMBER
- 1 — PLAN REFERENCE NOTE KEY

EQUIPMENT ANCHORAGE NOTES

ALL ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2016 CBC SECTIONS 1616A.1.18 THROUGH 1616A.1.26, AND ASCE 7-10 CHAPTER 13 AND 26-31.

ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10 SECTION 13.3, AS DEFINED IN ASCE 7-10 SECTION 13.6.5.6, 13.6.7 AND 13.6.8, AND 2016 CBC SECTION 1616A.1.23,24,25,26.

THE ATTACHMENT OF THE FOLLOWING ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED PIPING OR CONDUIT.

A. COMPONENTS WEIGHING LESS THAN 400 LBS. AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT
B. COMPONENTS WEIGHING LESS THAN 20 LBS. OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.8, 13.6.7, 13.6.5.6, AND 2016 CBC, SECTIONS 1616A.1.23, 1616A.1.24, 1616A.1.25 AND 1616A.1.26.

THE BRACING AND ATTACHMENTS TO THE STRUCTURE SHALL BE DETAILED ON THE APPROVED DRAWINGS.

COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF HANGING AND BRACING OF THE PIPE, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS.
THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

SHEET INDEX

ARCHITECTURAL		**DSA PRECHECKED CANOPY ◇**	
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A0.1	OVERALL SITE PLAN	S-2	COVER SHEET 2
A1.3	DIMENSIONED ARRAYS	S-3	GENERAL NOTES & SPECIFICATIONS
A2.1	ENLARGED SITE PLAN / SITE DETAILS	S-4	DSA 103 FORMS
		S-5	SECTION PROPERTIES & REBAR DETAILS
		S-6	FRAMING PLAN
		S-7	BEAM/ COLUMN SCHEDULE
		S-8	NON-CONSTRAINED PIER FOUNDATION SCHEDULE
		S-10	SPREAD FOOTING SCHEDULE
ELECTRICAL ◇		S-12	BEAM TO COLUMN SCHEDULE
E1.0	ELECTRICAL SITE PLAN	S-32	PURLIN SCHEDULE
E2.0	ELECTRICAL SINGLE LINE DIAGRAM	S-33	STANDARD PURLIN DETAILS
E3.0	TYPICAL ELECTRICAL THREE LINE DIAGRAM	S-34	STANDARD SOLAR PANEL SUPPORT DETAILS
E4.0	ELECTRICAL DETAILS	S-36	OPTIONAL GROUNDING DETAILS
E5.0	TYPICAL ELECTRICAL SOLAR WARNING LABELS	S-37	STANDARD ELECTRICAL DETAILS
E6.0	ELECTRICAL SOLAR EQUIPMENT CUT SHEETS	S-37.1	ALTERNATE CONNECTION DETAILS
E7.0	LIGHTING TITLE 24 COMPLIANCE FORMS	S-38	EQUIPMENT PAD
ES1.0	SOLAR ARRAY ELECTRICAL STRING CABLING PLAN	S-39	BRACED UNISTRUT EQUIPMENT RACK 1
		S-42	EQUIPMENT PAD ENCLOSURE
		S-44	PERIMETER FENCE/ SCHEDULE

CLIENT

Bakersfield City School District
1300 BAKER STREET, BAKERSFIELD, CA 93305

PROJECT LOCATION

PIONEER DRIVE ES
4404 PIONEER DR.
BAKERSFIELD CA. 93306

DESIGNER

FOREFRONT POWER

ARCHITECT

ATI ARCHITECTS ENGINEERS
www.atiae.com
4750 Willow Road Suite 250 Pleasanton, CA 94588 T 925.648.8800
2510 Douglas Boulevard Roseville, CA 95661 T 916.772.1900
3050 Pullman Street Costa Mesa, CA 92626 T 714.358.1600

PROFESSIONAL STAMP

LICENSED ARCHITECT MARK S. BELLO C 20677 Exp: Mar. 31, 2019 STATE OF CALIFORNIA

AGENCY APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC MP FLS PPSS
Date JUL 3 1 2018
33 SHEETS TOTAL + DSA 103, NO SPECS.

ISSUE

MARK	DATE	DESCRIPTION
–	TBD	DSA SUBMITTAL

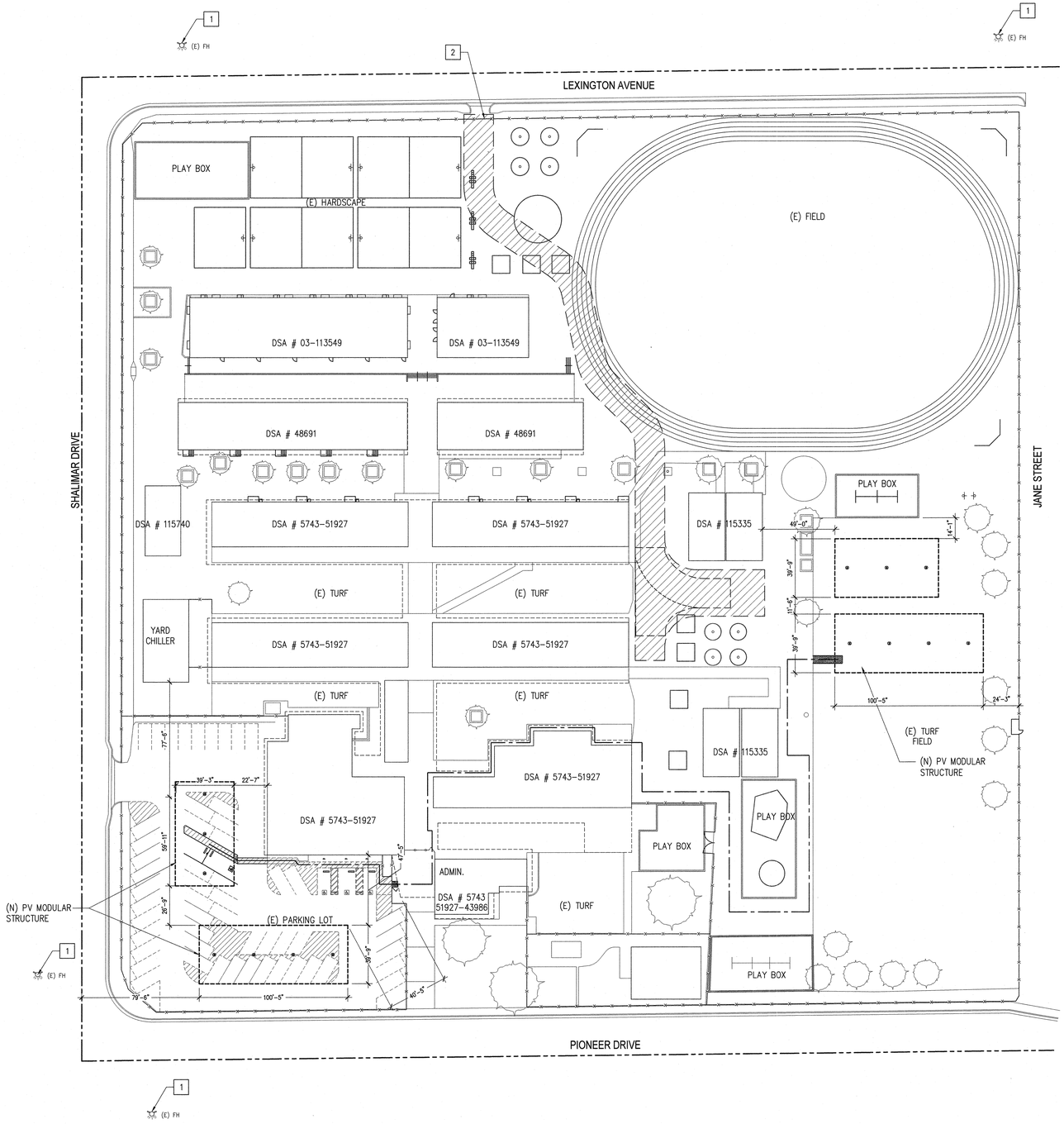
PROJECT No : ATI PROJ. #CA4906-005
DRAWN BY:
CHECKED BY:
SCALE:
KEY MAP

SHEET TITLE

COVER SHEET

SHEET NUMBER

G0.0



1 FIRE ACCESS SITE PLAN

SCALE : 1"=40'-0"

P:\C\CA4900_Collins_Electrical_Inc\CA4906_Bakersfield_SD_Solar\CA4906_005_Pioneer_ES\3_Dwgs\F01\+F01-SITE.dwg 6-21-18 11:34:51 AM mloree

SITE PLAN LEGEND

- (E) FIRE LANE ACCESS, 20'-0" MIN. CLEAR
- ASSUMED PROPERTY LINE
- (E) FIRE HYDRANT
- (N) PV MODULAR STRUCTURE

GENERAL NOTES

1. (E) FIRE HYDRANT
2. (E) 20'-0" GATE W/ KNOX BOX

DSA **810**

LOCAL FIRE AUTHORITY REVIEW

To facilitate the Division of the State Architect's (DSA) approval of the Fire/Life Safety portion of a project, DSA requires Local Fire Authority (LFA) review of certain elements as identified in this form. Use of this form is mandatory for projects that add square footage to a campus or if any item on this form is relevant to the project. For additional information, see DSA 810 Instructions and DSA Policy 09-01.

PROJECT INFORMATION

School District/Owner: Bakersfield City School District

Project Name/School: Pioneer Drive Elementary School

Project Address: 4404 pioneer Dr. Bakersfield, Ca 93306

LOCAL FIRE AUTHORITY (LFA)

LFA Agency Name: Bakersfield Fire Department

LFA Reviewer Name: Ernie Medina | Title:

Work Email: emedina@bakersfieldfire.us | Work Telephone Number: (661) 326-3682

I have reviewed and responded to the applicable items for this project as listed below.

***Note:** Only sign this form when it is imaged onto the site plan. A loose form is not acceptable to DSA.*

LFA Reviewer's Signature: Ernie Medina **Date:** 7/25/18

Review Key: **"Y"** = Complies with LFA requirements **"N"** = Not approved (complete Section 8) **"NA"** = Not applicable to the project **"NR"** = LFA elects not to review

	Description	Y	N	NA	NR
1	Where an elevator does not meet medical emergency service cab size, per the California Building Code (CBC), use of stairways for emergency rescue and patient transport is acceptable.			X	
2	Access roads, fire lane markings, pavers and gate entrances are in accordance with Title 19, California Code of Regulations and the California Fire Code, Chapter 5.	X			
3	Fire hydrant location and distribution complies with the California Fire Code (or see # 4).	X			
4	Fire hydrant location and distribution complies with NFPA 1142, "Alternate Means." If "NR" is checked, DSA can only approve on-site water storage as an alternate. The signature of the school district official is required to acknowledge the use of alternate means.				X
	Signature of School District Official: _____ **Date:** _____ **Print the School District Official's Name:** _____				
5	The location(s) of the proposed post indicator valve and fire department connection meet the requirements of this jurisdiction.			X	
6	The location(s) of the detector check valve assembly meet the requirements of this jurisdiction.			X	
7	Is the project located in a hazard severity zone area? (CBC, Chapter 7A, Section 701A.) ☐ Yes ☒ No Check type if "Yes": ☐ Moderate ☐ High ☐ Very High ☐ WIFA (If one of these boxes is checked, the project design must meet the requirements of Chapter 7A.)				
8	COMMENTS (note deficiencies): PLEASE MAINTAIN 13.6 FT MIN. ON LOW END HEIGHT FOR FIRE ACCESS.				

CLIENT

Bakersfield City School District
1300 BAKER STREET, BAKERSFIELD, CA 93305

PROJECT LOCATION

PIONEER DRIVE ES
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LICENSED ARCHITECT JOHN S. MILLO C 20677 Exp: Mar. 31, 2019 STATE OF CALIFORNIA

AGENCY APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC FLS SS LY
Date JUL 31 2018

ISSUE

MARK	DATE	DESCRIPTION
–	TBD	DSA SUBMITTAL

PROJECT No : ATI PROJ. #CA4906-005

DRAWN BY:

CHECKED BY:

SCALE:

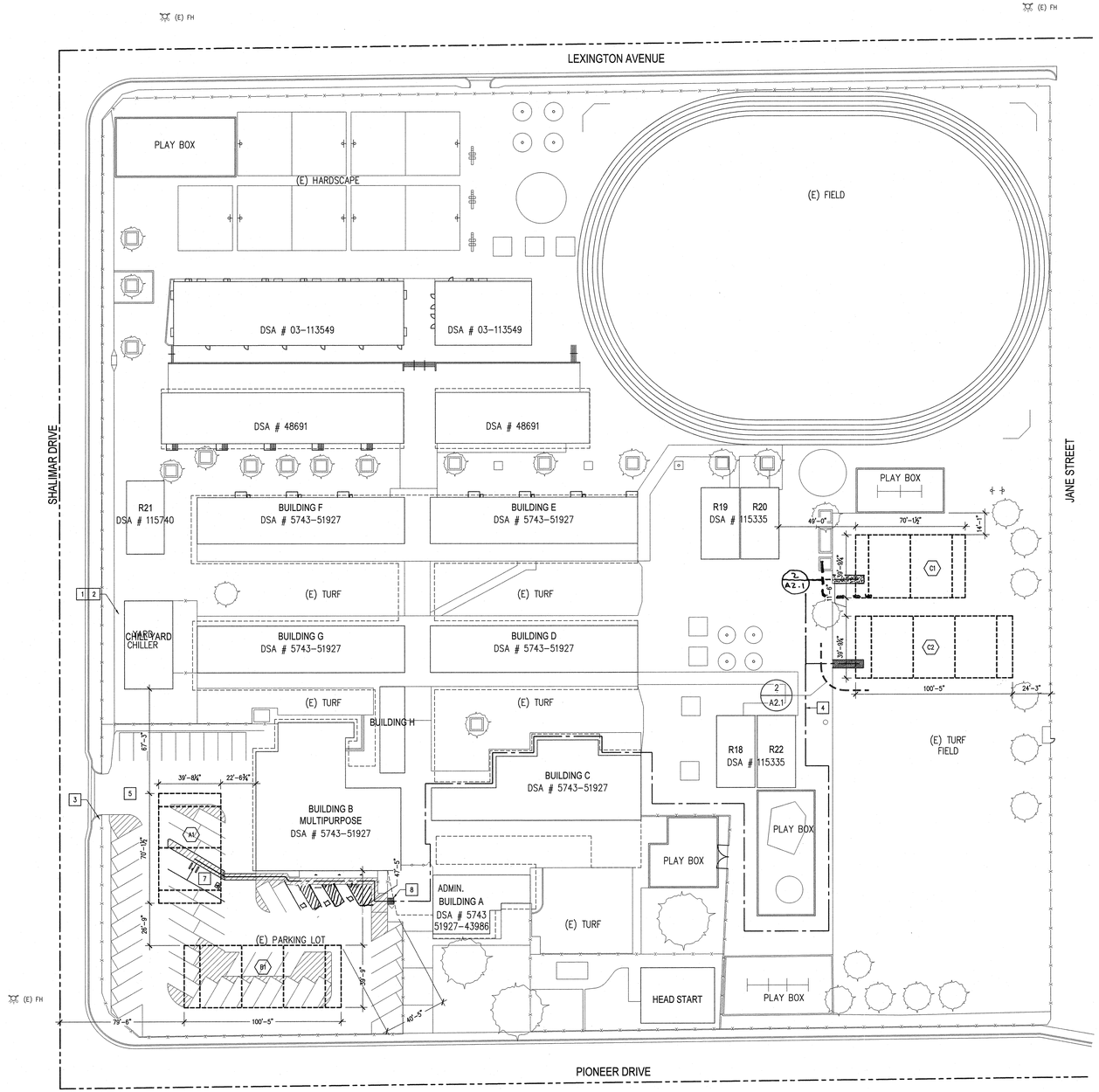
KEY MAP

SHEET TITLE

FIRE ACCESS SITE PLAN

SHEET NUMBER

F0.1



1 SITE PLAN

SCALE : 1"=40'-0"

NORTH

GENERAL NOTES

SOLAR CANOPY DIMENSIONS ARE MEASURED FROM EDGE OF SOLAR PANELS, AND ARE SHOWN ONLY FOR GENERAL SITE REFERENCE. FOR ACTUAL CANOPY DIMENSIONS REFER TO STRUCTURAL DRAWINGS.

KEYNOTES

1. (N) ELECTRICAL DISCONNECT, S.E.D.
2. (E) ELECTRICAL METER / EQUIPMENT TIE IN, S.E.D.
3. (E) TOW AWAY SIGN. VERIFY COMPLIANCE WITH 5/A2.1 OR REPLACE
4. (N) PATH OF TRAVEL (P.O.T.) FROM PROPOSED SOLAR ARRAYS
5. (E) FIRE LANE ACCESS, MAINTAIN 20'-0" MIN. CLEAR
6. EXISTING LIGHT POLE, LIGHT, & OVERHEAD WIRING TO BE REMOVED BY SMUD. PROVIDE UNDER-CANOPY LIGHTING PER DISTRICT SPEC.
7. ACCESSIBLE PARKING & LOADING SEE ENLARGED PLANS
8. (E) ZERO CURB AND TRUNCATED DOMES PER DSA APPROVAL #03-113549

SITE PLAN LEGEND

ACCESSIBLE PATH OF TRAVEL (P.O.T) AS INDICATED ON PLANS IS A BARRIER-FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAX SLOPE, OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAX, AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE, FIRM, AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5%, UNLESS OTHERWISE INDICATED. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80". ARCHITECT SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL. ACCESSIBLE PATH OF TRAVEL AS SHOWN ON THE PLANS CAN BE NEGOTIATED BY A PERSON WITH DISABILITY USING A WHEELCHAIR, AND THAT IS ALSO SAFE FOR AND USABLE BY PERSONS WITH OTHER DISABILITIES.

ASSUMED PROPERTY LINE

(E) FIRE LANE ACCESS, 20'-0" MIN. CLEAR

(N) PV MODULAR STRUCTURE
IF THE PV STRUCTURE CROSSES THE FIRE LANE, THE STRUCTURE MUST BE 13'-0" HIGH MIN.

ARRAY NUMBER

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT

THE PATH OF TRAVEL (P.O.T.) IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NONCOMPLIANT (1) HAVE BEEN IDENTIFIED AND (2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF P.O.T. ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

COVERED PARKING COUNT

	TOTAL STALLS	ACCESSIBLE STD.		ACCESSIBLE VAN		TOTAL ACCESSIBLE	
		REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED
PARKING LOT	55	2	2	1	2	3	4
COVERED	18 (33%)	0	0	1	1	1	1*

* PERCENTAGE BASED ON TOTAL ACC. SPACES REQUIRED, NOT PROVIDED

ARRAY CODE ANALYSIS/SELECTION TABLE

ARRAY #	OCC. TYPE	CONSTR. TYPE	ACTUAL AREA (FT^2)	SPRINKLERED	BASIC ALLOWABLE AREA-CBC TABLE 506.5.5	ARRAY DESIGN:	PIER DEPTH PER TABLE SHEET S-8
A1	S2	IIB	3993	N			SEE STRUCTURAL SHEET S-8
		TOTAL:	3993		26000 SF		
B1	S2	IIB	2349	N			
		TOTAL:	2349		26000 SF		
C1	A3	IIB	2349	N		300 occ. max	
C2	A3	IIB	3993	N		300 occ. max	
		TOTAL:	6342		9500 SF		

CLIENT

Bakersfield City School District
1300 BAKER STREET, BAKERSFIELD, CA 93305

PROJECT LOCATION

PIONEER DRIVE ES
4404 PIONEER DR.
BAKERSFIELD CA. 93306

DESIGNER

FOREFRONT POWER

ARCHITECT

ATI ARCHITECTS + ENGINEERS
www.atiae.com
4750 Willow Road Suite 250 Pleasanton, CA 94588 T 925.648.8800
2510 Douglas Boulevard Roseville, CA 95661 T 916.772.1900
3050 Pullman Street Costa Mesa, CA 92626 T 714.338.1000

PROFESSIONAL STAMP

LICENSED ARCHITECT MARK S. BELLO C 20677 Exp: May 31, 2019 STATE OF CALIFORNIA

AGENCY APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
ACMF FLS PSS RY
Date JUL 31 2018

ISSUE

MARK	DATE	DESCRIPTION
–	TBD	DSA SUBMITTAL

PROJECT No : ATI PROJ. #CA4906-005
DRAWN BY:
CHECKED BY:
SCALE:
KEY MAP

SHEET TITLE

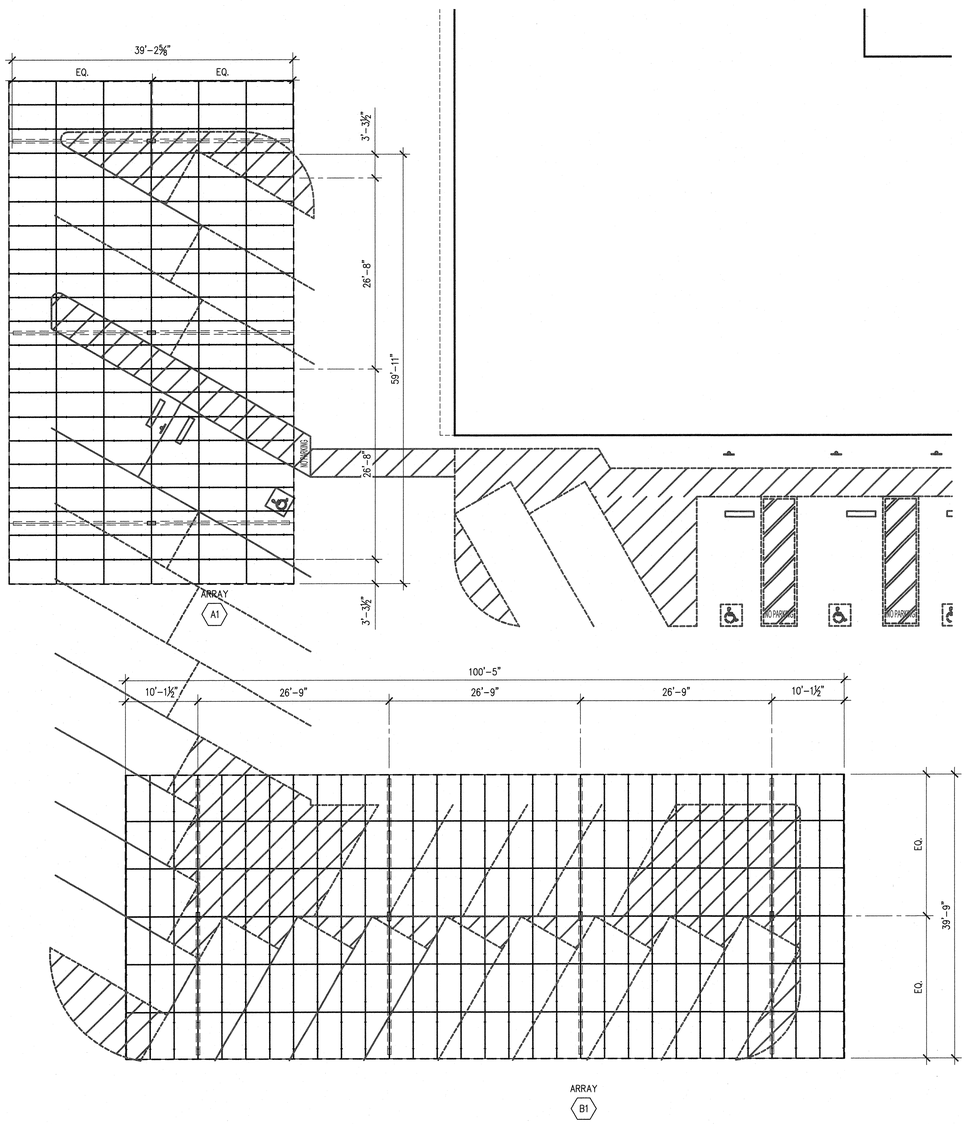
SITE PLAN

SHEET NUMBER

A0.1

NOTE: PROVIDE 13'-6" MIN. CLEAR HEIGHT AT LOW END OF ALL CANOPIES.

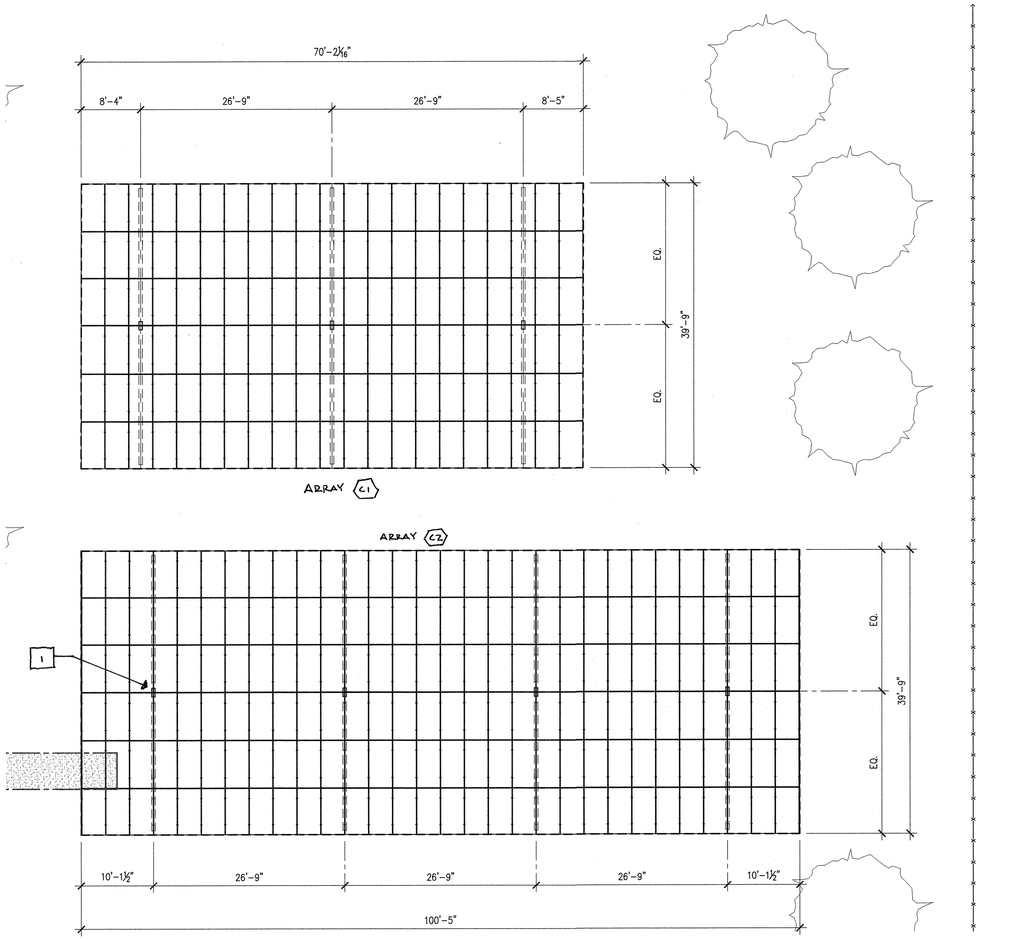
1 PROVIDE "MAX OCCUPANTS: 300" SIGN IN COMPLIANCE WITH 2016 CBC 1113-703.5 MOUNTED AT 80" TO BOTTOM WITH 2" HIGH MIN. TEXT.



2 ARRAY PLAN

SCALE : 1"=10'-0"

NORTH



1 ARRAY PLAN

SCALE : 1"=10'-0"

NORTH

P:\C\CA4900_Collins_Electrical_Inc\CA4906_Bakersfield_SD_Solar\CA4906_005_Pioneer_ES\3_Dwgs\A13\+A13-ARRAY.dwg 7-26-18 11:35:04 AM mloree

CLIENT

Bakersfield City School District
1300 BAKER STREET, BAKERSFIELD, CA 93305

PROJECT LOCATION

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PROFESSIONAL STAMP

LICENSED ARCHITECT
MARK S. BELLO
C 20677
Exp: Marr.31, 2019
STATE OF CALIFORNIA

AGENCY APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC ME FLS SS ST
Date JUL 31 2018

ISSUE

MARK	DATE	DESCRIPTION
–	TBD	DSA SUBMITTAL

PROJECT No : ATI PROJ. #CA4906-005
DRAWN BY:
CHECKED BY:
SCALE:

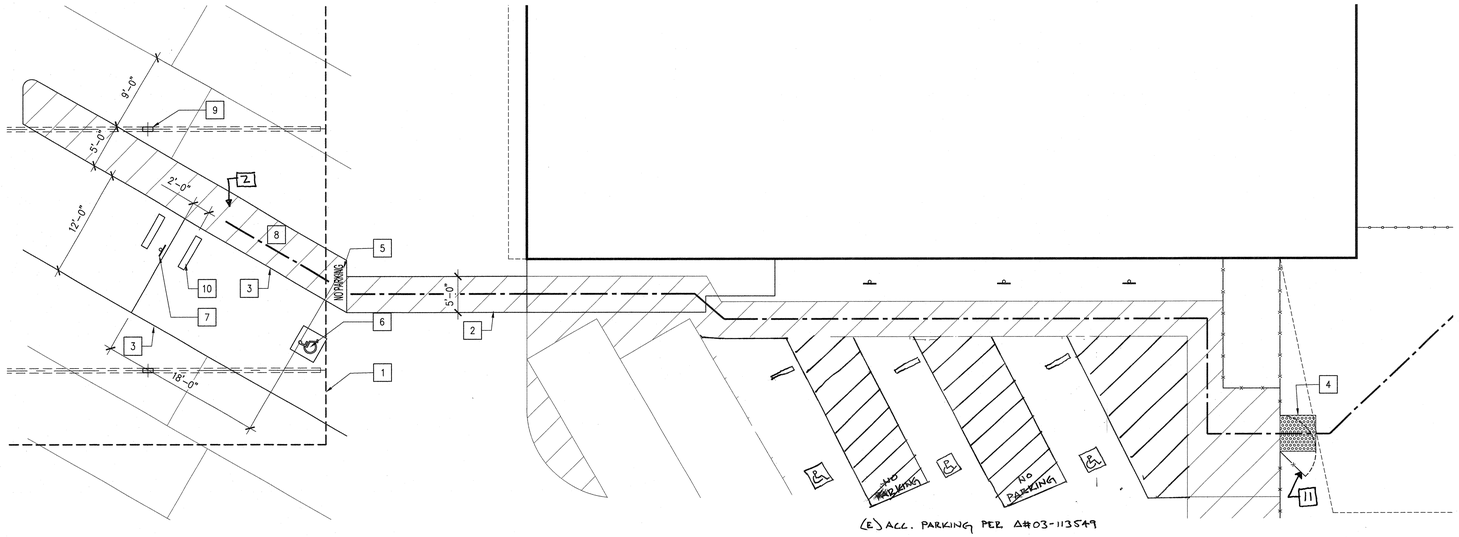
KEY MAP

SHEET TITLE

DIMENSIONED ARRAYS

SHEET NUMBER

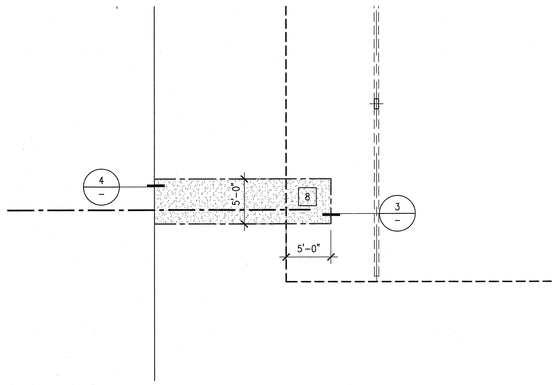
A1.3



1 ACCESSIBLE PARKING ENLARGED SITE PLAN

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

NORTH



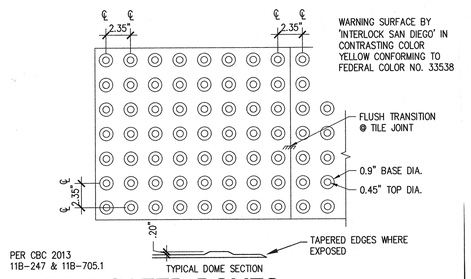
2 ACCESSIBLE AC PAD

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

NORTH

KEY NOTES

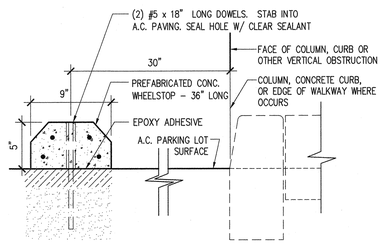
1. (N) SOLAR PANEL STRUCTURE ABOVE
2. (N) 4" WIDE PAINTED WHITE STRIPING AT 36" O.C. AND BORDERS, TYP.
3. (N) 4" WIDE PAINTED BLUE STRIPING AND BORDERS, TYP. 15090 PER FED. STD. 595C
4. (E) TRUNCATED DOMES, MODIFY AS NEEDED TO COMPLY WITH DTL. 9.
5. (N) 12" PAINTED WHITE LETTERS – "NO PARKING"
6. (N) ACCESSIBLE PARKING SYMBOL, SEE DETAIL 3/–
7. (N) ACCESSIBLE SIGNAGE. VERIFY/INSTALL (MIN. FINE $250), SEE DETAIL 7/–
8. 2% SLOPE MAX. IN ANY DIRECTION AT PARKING SPACE, LOADING ZONE, AND ACCESSIBLE PAD TYP.
9. (N) COLUMN SUPPORTING SOLAR PANEL STRUCTURE
10. (N) CONCRETE WHEEL STOP, SEE DETAIL 8/–
11. (E) ACC. GATE PER 03-113549



9 TRUNCATED DOMES WARNING SURFACE

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

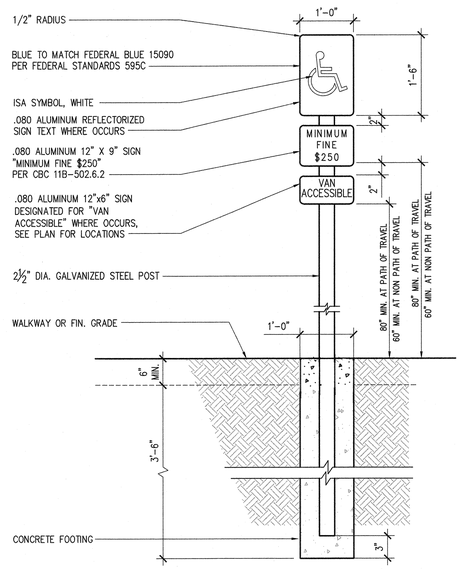
JOB# – DWGSCALE: 9
+A11– PARTIAL SITE PLAN.DWG



8 CONCRETE WHEEL STOP

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

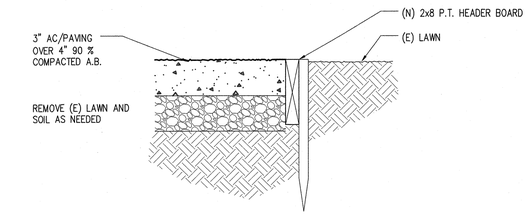
SA7900 – DWGSCALE: 480
+A01–SITE.DWG



7 TYP. ACCESSIBLE PARKING SIGNAGE W/ VAN ACCESSIBLE OPTION

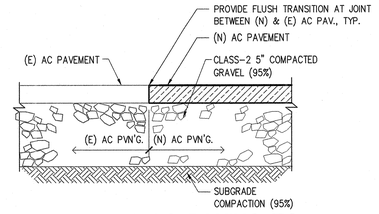
SCALE: 3/4"=1'-0"

JOB# – DWGSCALE: 16
SITE–SIGN–ACCPARK.DWG



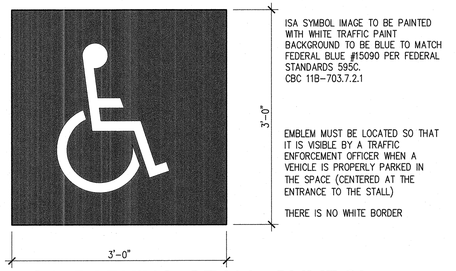
3 ASPHALT PAVING EDGE

SCALE : 3" = 1'-0"



4 DETAIL AT (E) AC PAVING TO (N) AC PAVING (TYPICAL)

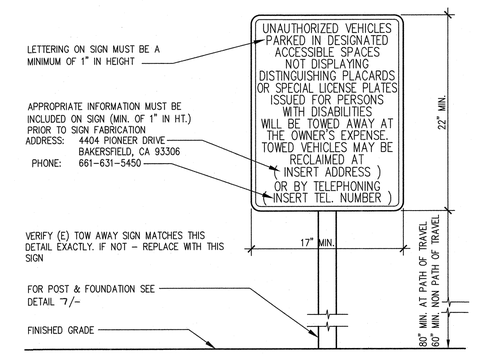
SCALE : 1-1/2"=1'-0"



5 ISA PARKING STALL SYMBOL

SCALE: 1"=1'-0"

JOB# – DWGSCALE: 12
SITE–SIGN–ISA.DWG



6 SIGN - TOW AWAY

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

JOB# – DWGSCALE: 1
SITE–SIGN–TOWAWAY.DWG

CLIENT

Bakersfield City School District
1300 BAKER STREET, BAKERSFIELD, CA 93305

PROJECT LOCATION

PIONEER DRIVE ES
4404 PIONEER DR.
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DESIGNER

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PROFESSIONAL STAMP

LICENSED ARCHITECT MARK S. BELLO C 20677 Exp. Mar. 31, 2019 STATE OF CALIFORNIA

AGENCY APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC MF FLS SS CY
Date JUL 31 2018

ISSUE

MARK	DATE	DESCRIPTION
–	TBD	DSA SUBMITTAL

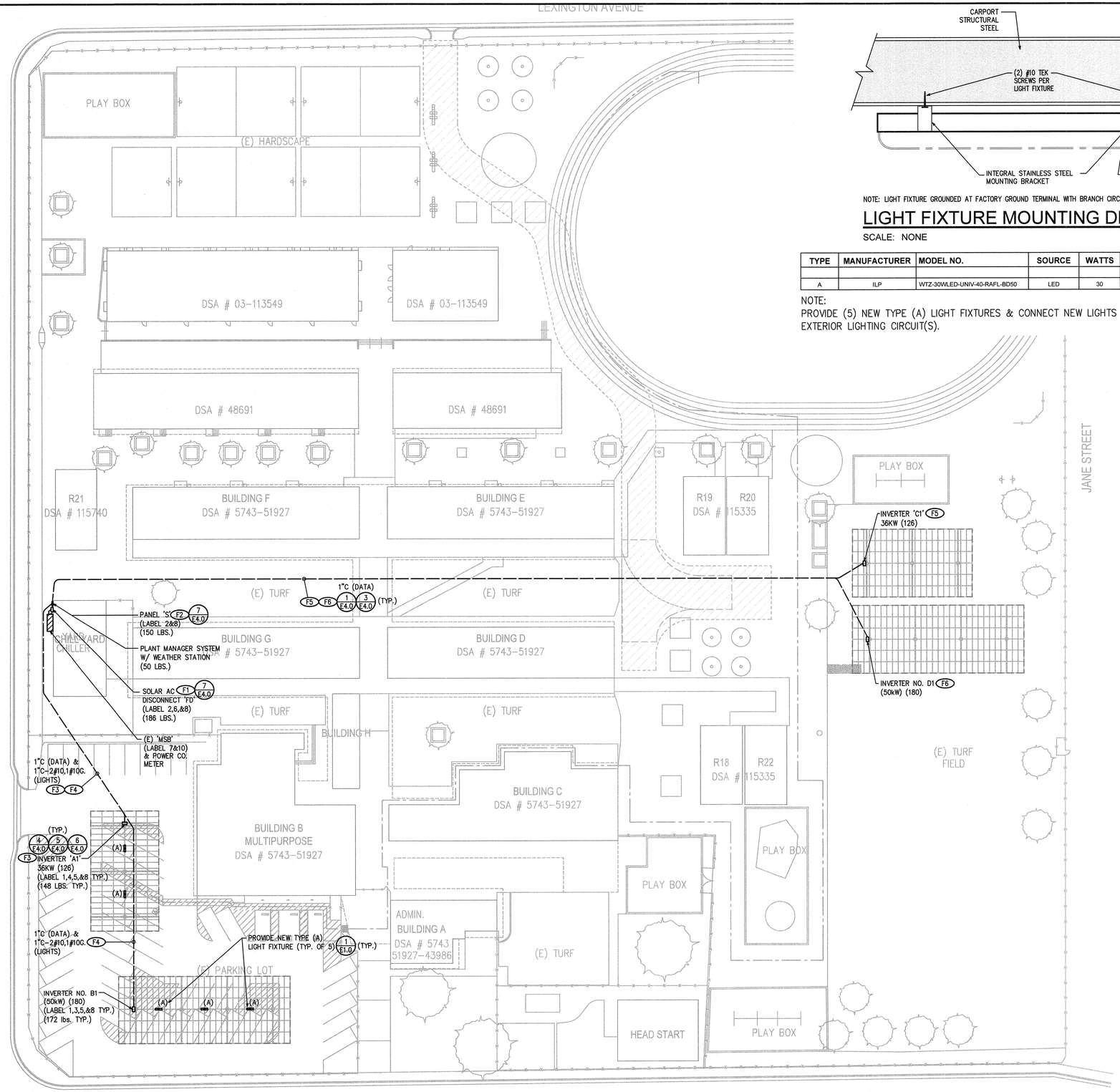
PROJECT No : ATI PROJ. #CA4906-005
DRAWN BY:
CHECKED BY:
SCALE:
KEY MAP

SHEET TITLE

ENLARGED SITE PLAN / SITE DETAILS

SHEET NUMBER

A2.1



ELECTRICAL SITE PLAN

SCALE: 1" = 30'-0"

NORTH

0 7.5' 15' 30' 60'

NOTE: LIGHT FIXTURE GROUNDED AT FACTORY GROUND TERMINAL WITH BRANCH CIRCUIT GROUNDING CONDUCTOR.

LIGHT FIXTURE MOUNTING DETAIL 1

SCALE: NONE

TYPE	MANUFACTURER	MODEL NO.	SOURCE	WATTS	VOLT	MOUNTING
A	ILP	WTZ-30WLED-UNIV-40-RAFL-BD50	LED	30	120-277	SURFACE, CARPORT STEEL

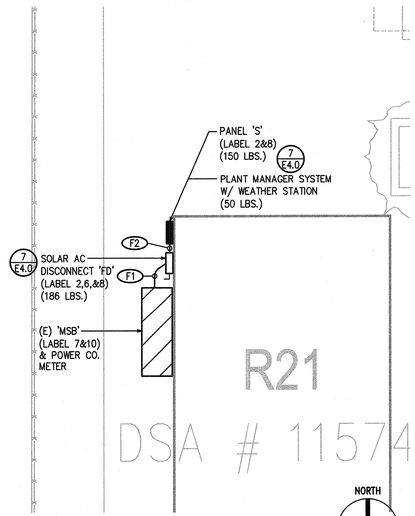
NOTE:
PROVIDE (5) NEW TYPE (A) LIGHT FIXTURES & CONNECT NEW LIGHTS TO EXISTING CONTROLLED EXTERIOR LIGHTING CIRCUIT(S).

GENERAL ELECTRICAL NOTES:

1. ALL WORK AND MATERIAL SHALL CONFORM TO 2016 CBC, DSA IR 16-8, 2016 CEC ARTICLE 690 & OTHER APPLICABLE ARTICLES, CODES AND ORDINANCES. IT IS THE INTENTION OF THESE PLANS AND SPECIFICATIONS TO COVER ALL THINGS REQUIRED TO PROVIDE COMPLETE AND OPERATIVE SYSTEMS.
2. ALL EQUIPMENT TO HAVE TESTING LABORATORY LABEL ATTACHED.
3. CONDUCTORS SHALL BE THWN COPPER (CU) UNLESS INDICATED AS ALUMINUM (AL).
4. ELECTRICAL ROUTING IS DIAGRAMMATIC ONLY. ACTUAL ROUTING & PHYSICAL CONDITION MAY VARY, CONTRACTOR TO DETERMINE ACTUAL ROUTING AND PROVIDE ALL RECONNECTIONS & ITEMS NECESSARY FOR COMPLETE & OPERATING SYSTEMS.
5. ALL SOLAR ELECTRICAL EQUIPMENT TO BE UL 1741 LISTED, IEEE 1547 RATED, & APPROVED BY THE CALIFORNIA ENERGY COMMISSION.
6. ELECTRICAL EQUIPMENT (BRANDS "OR EQUAL" NOTE REQUIRED). OR EQUAL MATERIALS NEED TO BE APPROVED BY OWNER OR OWNER'S REPRESENTATIVE. LAYOUT LOCATIONS ARE REPRESENTATIVE AND ARE SUBJECT TO CHANGE WITH APPROVAL OF OWNER AND PERMITTING AUTHORITY, ETC.
7. PROVIDE "CAUTION: SOLAR CIRCUITS" AFFIXED LABEL ON PV CONDUIT RUNS, BOXES, & CONDUIT BODIES INSIDE BUILDING.
8. STRING 1000V DC UL4703 (PV-WIRE) CABLING SHALL BE SUPPORTED TO MODULE & ARRAY STRUCTURE WITH WILEY ACME CABLE CLIPS.
9. ALL INVERTER DC STRING FUSES ARE 15 AMP UNLESS NOTED OTHERWISE.
10. HORIZONTAL DIRECTIONAL BORING OR TRENCHING FOR UNDERGROUND CONDUIT RUNS.
11. WHERE FEEDER CONDUCTORS ARE OVERSIZED FOR VOLTAGE DROP, PROVIDE CONDUCTOR REDUCING MEANS TO ACCOMMODATE INVERTER, PANEL, & DISCONNECT LUGS, SIZED PER CEC AMPACITY REQUIREMENTS. THE MINIMUM CONDUCTOR SIZE, FOR CIRCUIT BREAKERS LISTED FOR 75°C TERMINATING, SHALL BE: 50kW INVERTER #2, #6 GND. (AL). 36kW INVERTER #4, #8 GND. (AL).
12. NEW LIGHTING TO BE TIED INTO EXISTING EXTERIOR LIGHTING CIRCUIT(S) OR FROM AN EXISTING PANEL BOARD.

ELECTRICAL SYMBOLS:

- CONDUIT OR CABLE RUN ABOVE GRADE
- NEW CONDUIT OR CABLE RUN UNDERGROUND
- EXISTING CONDUIT RUN UNDERGROUND
- CONDUIT STUB OUT
- A-2 HOMERUN OF CONDUIT AND WIRING, CIRCUIT NO. 2 TO PANEL 'A'
- POWER EQUIPMENT AS NOTED
- INVERTER AS NOTED
- J JUNCTION BOX
- GROUND
- T TRANSFORMER
- CIRCUIT BREAKER
- 600V 3 POLE LOCKABLE & VERIFIABLE AC DISCONNECT SWITCH
- FUSE
- M METER
- PARKING LOT LIGHT, POLE, & CONCRETE BASE
- LED LIGHT FIXTURE, SURFACE MOUNTED
- (E) EXISTING
- (N) NEW



MAIN ELECTRICAL SERVICE PLAN

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

CLIENT

Bakersfield City School District
1300 Baker St., Bakersfield, CA 93305

PROJECT LOCATION

PIONEER DRIVE ELEMENTARY SCHOOL
4404 PIONEER DR.
BAKERSFIELD, CA 93306

DESIGNER

FOREFRONT POWER
100 Montgomery Street #1400
San Francisco, CA 94104
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T 714.338.1600

PROFESSIONAL STAMP

LICENSED ARCHITECT MARK S. BELLO C 20677 Exp:Mar.31, 2017 STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER R.J.HARDIN NO. 9125 ELECTRICAL STATE OF CALIFORNIA

AGENCY APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC FLS SS E1
Date JUL 3 1 2018

ISSUE

MARK	DATE	DESCRIPTION
–	7/31/2018	DSA SUBMITTAL

PROJECT No :	ATI PROJ. #
DRAWN BY:	HDE
CHECKED BY:	RJH
SCALE:	AS NOTED

CONSULTANT

COLLINS ELECTRICAL COMPANY INC.
1902 Channel Drive
West Sacramento, CA 95691
T 916.667.1100

SHEET TITLE

ELECTRICAL SITE PLAN

SHEET NUMBER

E1.0

FEEDER SCHEDULE (F)

No.	Feeder Origin	Feeder Destination	Potential at Origin (PI) (Volts)	Phase	Design Current (Amps)	Raceway Type	Sets of Cond.	Conductor Trade Size	Conductor Cross-Sectional Area (CM)	Conductor Material	DC Conductor Material Constant (K)	Q	Distance (ft)	Voltage Drop (Vd) (Volts)	Potential at Load (PI) (Volts)	Percent Voltage Drop (%Vd)	Total Voltage Drop (%Vd AC)	Conduit & Conductors
F1	MSB'	AC Disconnect 'FD'	480	Three	207	Steel	1	350 kCMIL	350000	CU	12.9	1.0627	15	0.21	479.79	0.04	0.04	3"C-3#350KCMIL, 1#2 NEUT., 1#2 GND. (CU)
F2	AC Disconnect 'FD'	Panel 'S'	480	Three	207	PVC	1	400 kCMIL	400000	AL	21.2	1.0208	5	0.10	479.90	0.02	0.06	3"C-3#400 KCMIL, 1#3/0 NEUT., 1#2 GND. (AL)
F3	Panel 'S'	Inverter No. A1	480	Three	43.3	Steel	1	4	41740	AL	21.2	1.0039	150	5.74	474.26	1.20	1.26	1-1/2"C-3#4, 1#8 GND. (AL)
F4	Panel 'S'	Inverter No. B1	480	Three	60.2	Steel	1	2	66360	AL	21.2	1.0031	270	9.02	470.98	1.88	1.94	1-1/2"C-3#2, 1#6 GND. (AL)
F5	Panel 'S'	Inverter No. C1	480	Three	43.3	PVC	1	2	66360	AL	21.2	1.0031	505	12.14	467.86	2.53	2.59	1-1/2"C-3#2, 1#6 GND. (AL)
F6	Panel 'S'	Inverter No. D1	480	Three	60.2	PVC	1	1/0	105600	AL	21.2	0.9950	525	10.94	469.06	2.28	2.34	2"C-3#1/0, 1#6 GND. (AL)

STRING DC WIRE SIZE CALCULATION
Isc: 9.49 x 1.56 = 14.80A
#10 AWG = 40A (90°C)(PER TABLE CEC 310.16)

21-30 CURRENT CARRYING CONDUCTORS IN A RACEWAY (SHARED CONDUIT)
(PER TABLE CEC 310.15(B)(2)(a) = 0.45

40A x 0.45 = 18.0A > 14.80 A ALLOWABLE
#10 AWG CONDUCTOR IS ALLOWABLE

STRING VOLTAGE DROP CALCULATION
INVERTER NO. A1
Vmp: 682.2 VDC, Imp: 8.97 A @ 85 FT (WORST CASE FROM ARRAY TO INVERTER)
#10 AWG cir. mils. = 10380
2 x 12.9 x 85 x 8.97 / 10380 = VDC lost
2.57 V / 682.2 VDC = 0.28% VOLTAGE DROP
INVERTER NO. B1 = 0.38% VOLTAGE DROP (115')
INVERTER NO. C1 = 0.28% VOLTAGE DROP (85')
INVERTER NO. D1 = 0.38% VOLTAGE DROP (115')

50 KW INVERTER AC Wire & OCPD CALCULATION:
INVERTER:
AC Output Power: 60.2A AC Output Current Max
60.2A x 1.25 = 75.3A
80 AMP OCPD PER 50kW INVERTER OUTPUT

#2 AWG THWN-2 = 90A (75°C)(PER TABLE CEC 310.16) (AL)

TEMP. CONDITIONS: OUTDOOR WIRE RUN - AMBIENT TEMP. = 38°C
(3) CURRENT CARRYING CONDUCTORS IN A RACEWAY (SHARED CONDUIT)
(PER TABLE CEC 310.15(B)(3)(a) = 1.0

90A x 1.0 = 90A = 90A TEMP. ADJUSTED
#2 CURRENT = 90A @ 75°C PER CEC 110.14(C)
#2 AWG CONDUCTOR IS MINIMUM ALLOWABLE (AL)

36 KW INVERTER AC WIRE & OCPD CALCULATION:
INVERTER:
AC OUTPUT POWER: 43.3A AC OUTPUT CURRENT MAX
43.3A X 1.25 = 54.125A
60 AMP OCPD PER 50KW INVERTER OUTPUT

#4 AWG THWN-2 = 65A (75°C)(PER TABLE CEC 310.16) (AL)

TEMP. CONDITIONS: OUTDOOR WIRE RUN - AMBIENT TEMP. = 38°C
(3) CURRENT CARRYING CONDUCTORS IN A RACEWAY (SHARED CONDUIT) (PER TABLE CEC 310.15(B)(3)(A) = 1.0

60A X 1.0 = 60A = 60A TEMP. ADJUSTED
#4 CURRENT = 95A @ 75°C PER CEC 110.14(C)
#4 AWG CONDUCTOR IS MINIMUM ALLOWABLE (AL)

MAX/COLD TEMP PV VOLTAGE CALCULATION:
LONGI SOLAR LR6-72HV 340M
Voc: 46.5V
Temp. Coefficient: -0.33%V/C
Low Temp*: -2.0°C (27.0Δ)
Modules in Series: 18

(46.5 V) x (0.0033 V/°C) x (27.0°) = 4.14 VΔ
46.5 Voc + 4.14 VΔ = 50.64 Voc(corr)
(50.64 V) x (18) = 911.6 VDC max (this is < 1000 VDC)

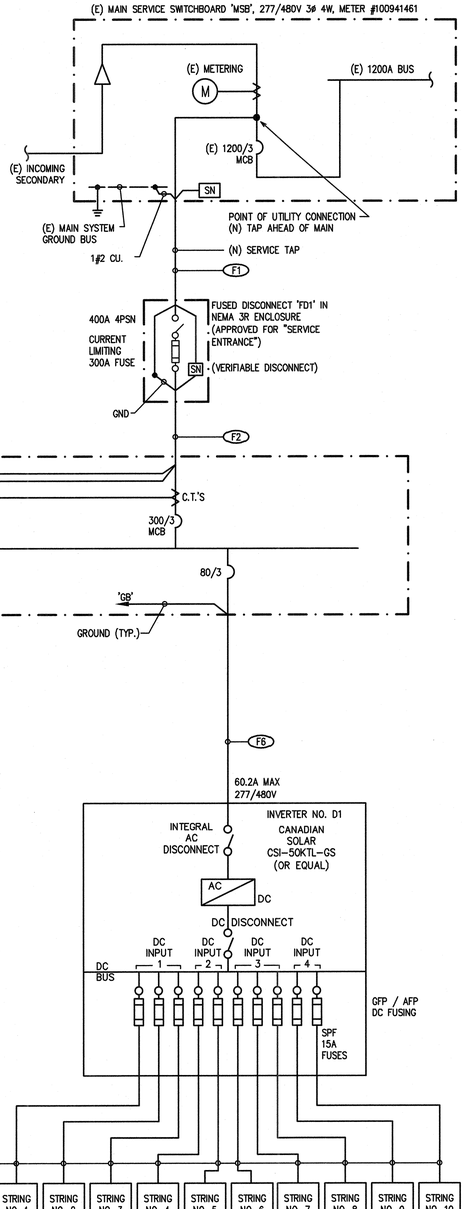
* = Per ASHRAE table

SYSTEM SUMMARY

MODULE MODEL	LONGI SOLAR LR6-72HV 340M
MODULE STC DC RATING	340W
TOTAL MODULE COUNT	612
TOTAL STC DC SYSTEM SIZE	208.08kW
TOTAL AC SYSTEM SIZE	172kW
INVERTER MODLES	(2) CANADIAN SOLAR CSI-50KTL-GS
	(2) CANADIAN SOLAR CSI-36KTL-GS-FL
MODULE TILT	(3) 7°, (1) 5°
ARRAY AZIMUTH	(3) 180°, (1) 270°
POINT OF SERVICE FAULT CURRENT CONTRIBUTION	2,180 AIC
POINT OF SERVICE RATING	65,000 AIC

600V HEAVY DUTY AC VERIFIABLE DISCONNECT SCHEDULE
(WITH CLASS 'RK1 OR RK5' CURRENT LIMITING FUSING)

DISCONNECT SIZE (VERIFIABLE)	MANUFACTURER'S CAT NO.	AIC RATING
400A 4PSN 600VAC	SQUARE D #H365 NR	200,000 AIC



SINGLE LINE DIAGRAM 208.08 KW TOTAL

SCALE: NONE

CLIENT

Bakersfield City School District
1300 Baker St., Bakersfield, CA 93305

PROJECT LOCATION

PIONEER DRIVE ELEMENTARY SCHOOL
4404 PIONEER DR.
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DESIGNER

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San Francisco, CA 94104
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ARCHITECT

ATI ARCHITECTS & ENGINEERS
4750 Willow Road Suite 350
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T 925.648.8800
2510 Douglas Boulevard
Roseville, CA 95661
T 916.772.1800
3050 Pullman Street
Costa Mesa, CA 92626
T 714.338.1600
www.atiae.com

PROFESSIONAL STAMP

LICENSED ARCHITECT MARK S. BELLO C 20677 Exp: Mar.31, 2017 STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER R.J. HARDIN NO. 9125 ELECTRICAL STATE OF CALIFORNIA

AGENCY APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC FLS SS
Date JUL 31 2018

ISSUE

MARK	DATE	DESCRIPTION
-	7/31/2018	DSA SUBMITTAL

PROJECT No : ATI PROJ. #
DRAWN BY: HDE
CHECKED BY: RJH
SCALE: AS NOTED

CONSULTANT

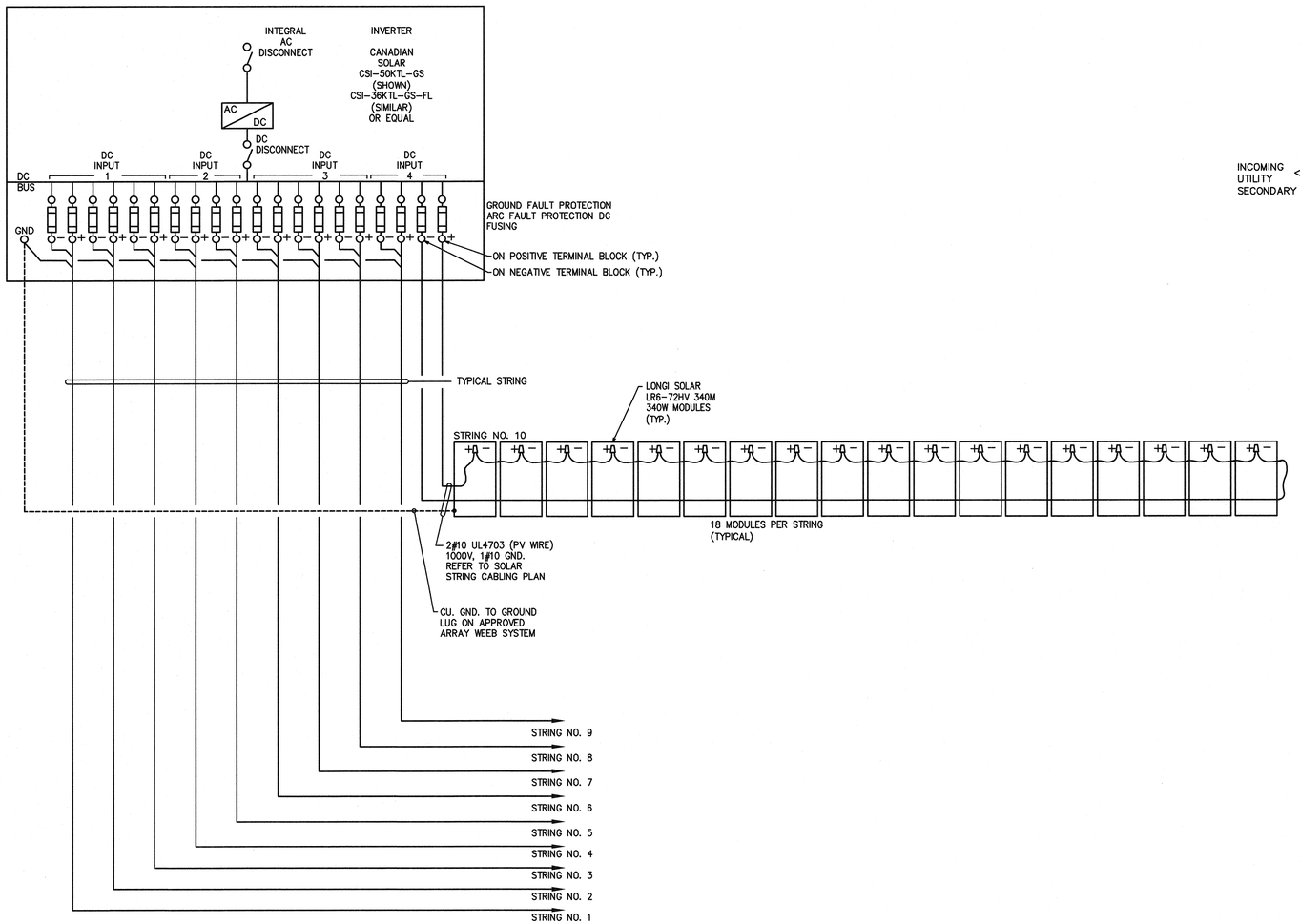
COLLINS ELECTRICAL COMPANY INC.
1502 Channel Drive
West Sacramento, CA 95691
T 916.567.1100

SHEET TITLE

ELECTRICAL SINGLE LINE DIAGRAM

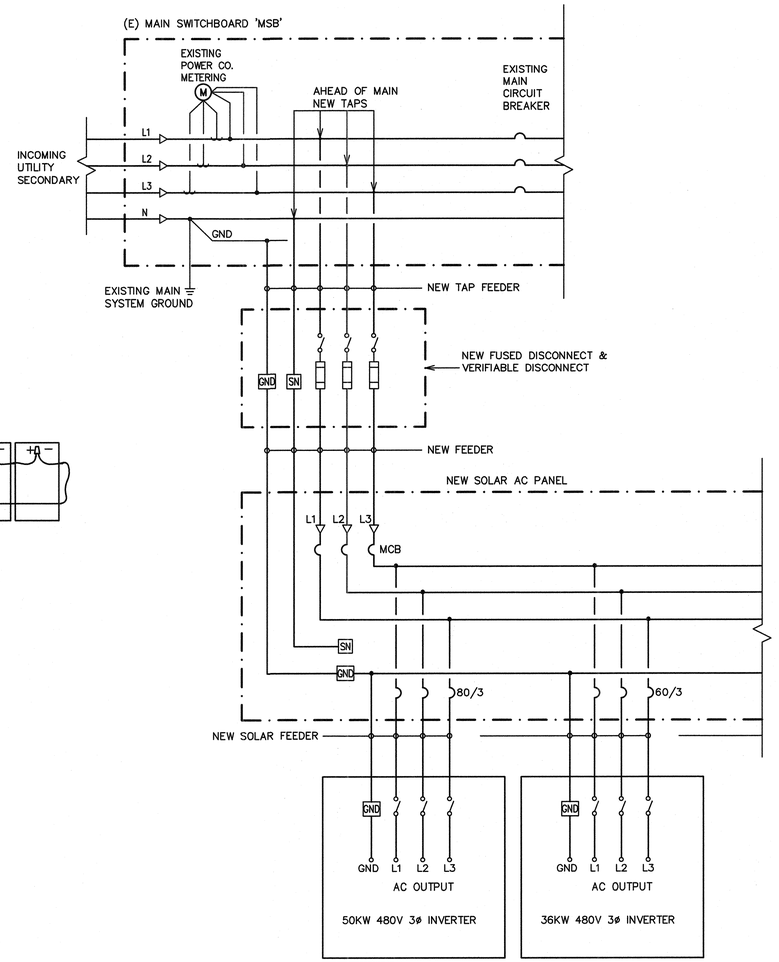
SHEET NUMBER

E2.0



TYPICAL DC LINE DIAGRAM

SCALE: NONE



TYPICAL THREE LINE DIAGRAM

SCALE: NONE

CLIENT

Bakersfield City School District
1300 Baker St., Bakersfield, CA 93305

PROJECT LOCATION

PIONEER DRIVE ELEMENTARY SCHOOL
4404 PIONEER DR.
BAKERSFIELD, CA 93306

DESIGNER

FOREFRONT POWER
100 Montgomery Street #1400
San Francisco, CA 94104
(855) 204-5083
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COLLINS ELECTRICAL COMPANY INC.
1902 Channel Drive
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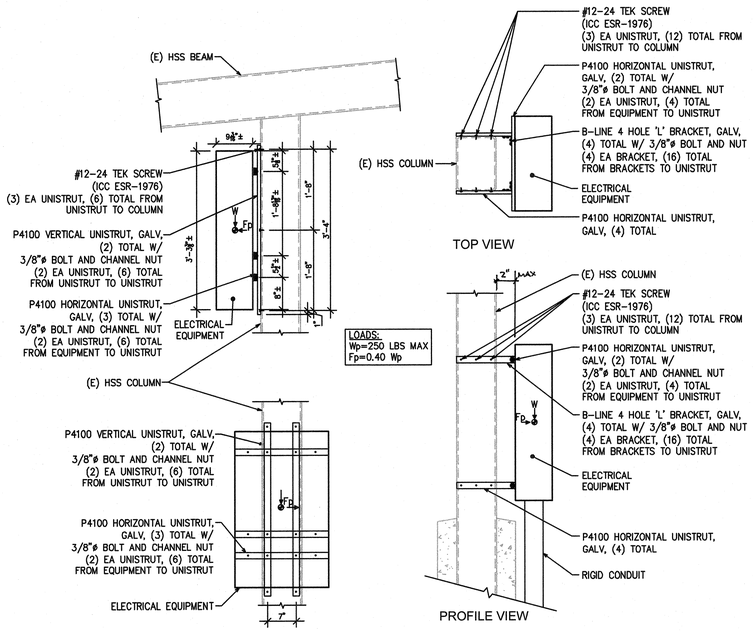
SHEET TITLE

TYPICAL ELECTRICAL THREE LINE DIAGRAM

SHEET NUMBER

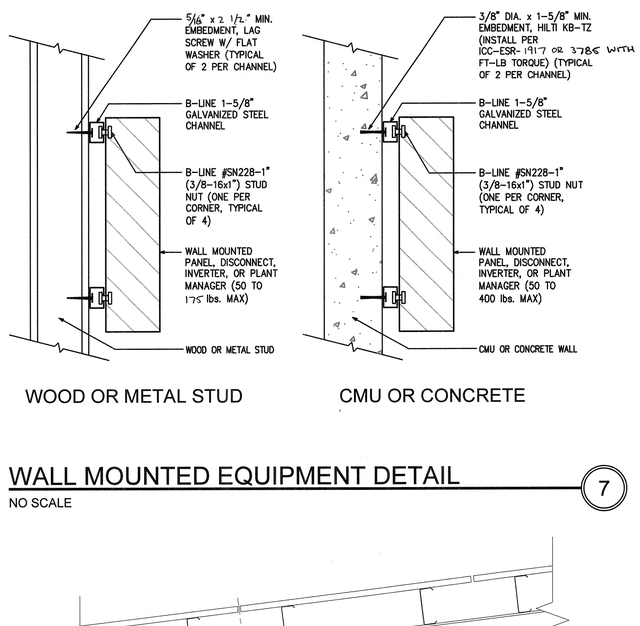
E3.0



NOTE:
1. COORDINATE EQUIPMENT DIMENSIONS AND UNISTRUT LOCATIONS WITH EQUIPMENT USED ON ELECTRICAL DRAWINGS

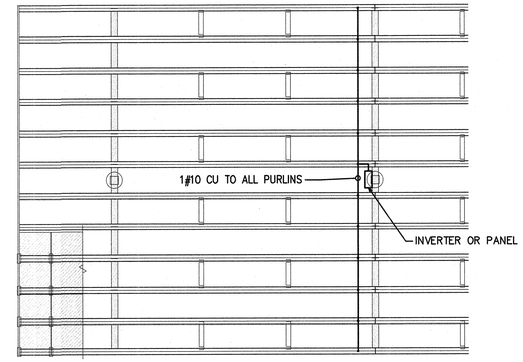
COLUMN MOUNTED EQUIPMENT ANCHORAGE DETAIL 6

NO SCALE

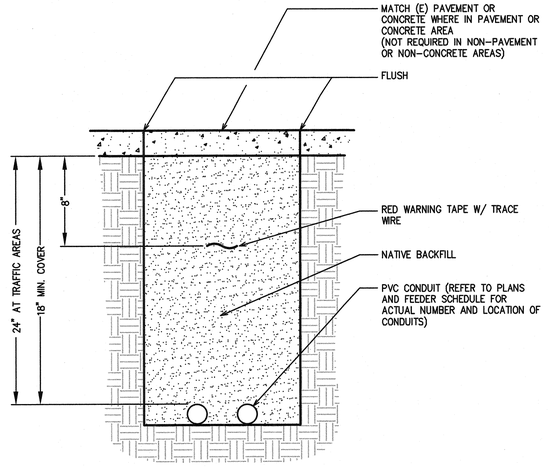


WALL MOUNTED EQUIPMENT DETAIL 7

NO SCALE



ARRAY GROUNDING DETAIL



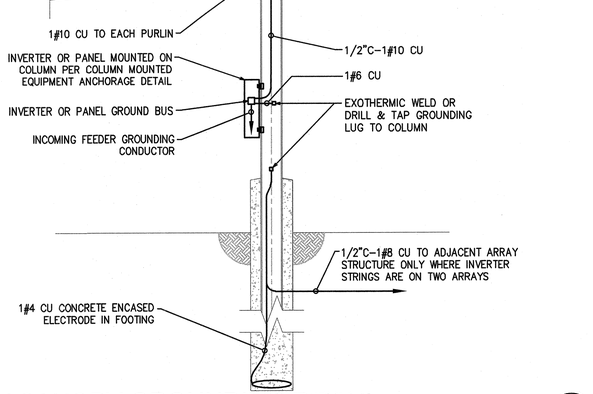
TRENCH THROUGH PAVEMENT TRAFFIC DETAIL 3

NO SCALE

TYPICAL PV CANOPY CONDUIT RISER DETAIL 4

NO SCALE

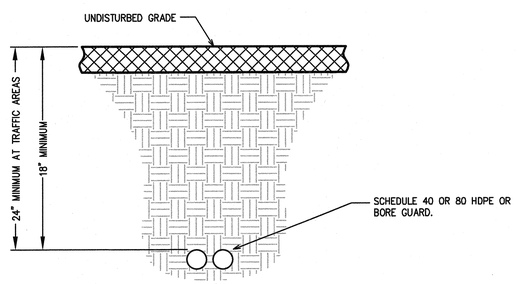
NOTE: ONE REQUIRED PER ARRAY STRUCTURE



PV CANOPY GROUNDING DETAIL 5

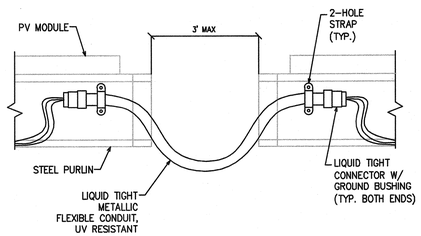
NO SCALE

NOTE: ONE REQUIRED PER ARRAY STRUCTURE

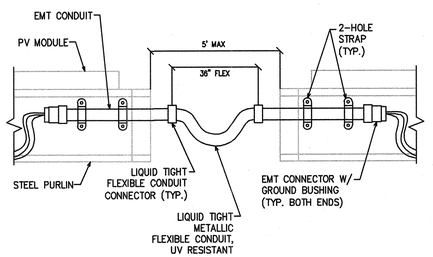


HORIZONTAL BORE DETAIL 1

SCALE: 1-1/2" = 1'-0"



UP TO 3' GAP



3' TO 5' GAP

WIRING BRIDGE DETAIL 2

NO SCALE

CLIENT

Bakersfield City School District
1300 Baker St., Bakersfield, CA 93305

PROJECT LOCATION

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CONSULTANT

COLLINS ELECTRICAL COMPANY INC.
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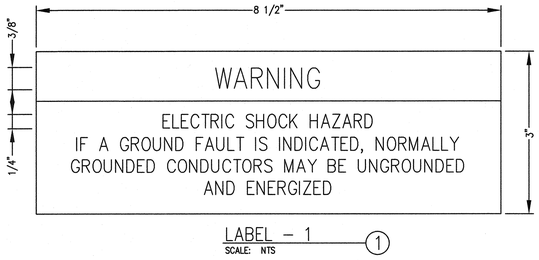
SHEET TITLE

ELECTRICAL DETAILS

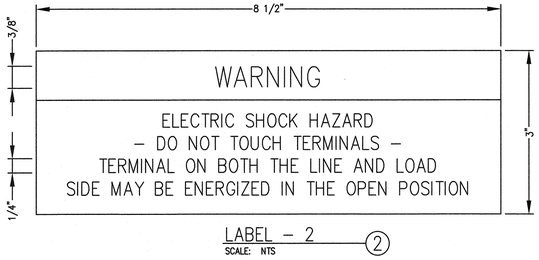
SHEET NUMBER

E4.0



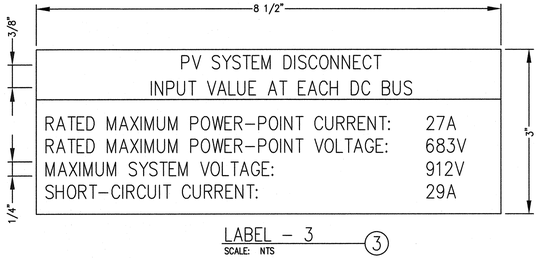
LABEL – 1 ①
SCALE: NTS

LOCATION:	INVERTERS
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



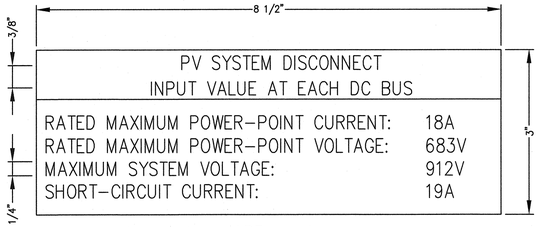
LABEL – 2 ②
SCALE: NTS

LOCATION:	AC DISCONNECTS & PANELBOARDS
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



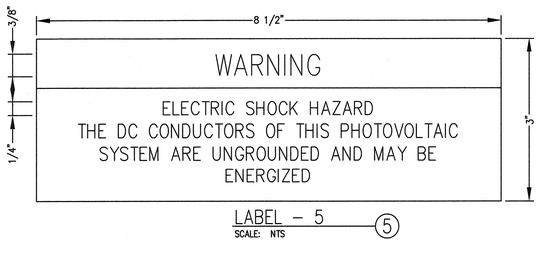
LABEL – 3 ③
SCALE: NTS

LOCATION:	50kW INVERTERS
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



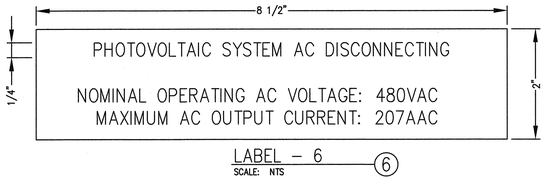
LABEL – 4 ④
SCALE: NTS

LOCATION:	36kW INVERTERS
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



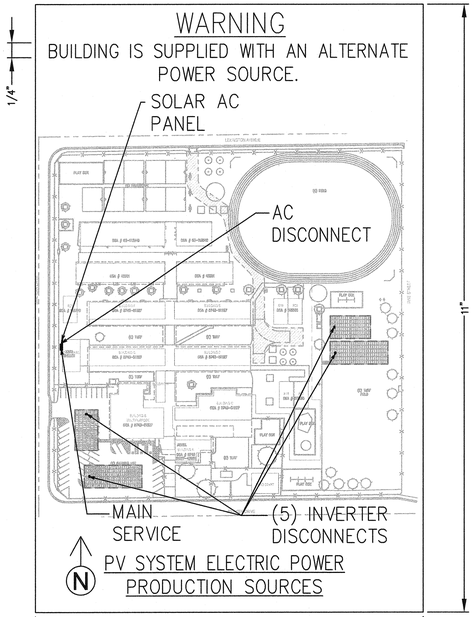
LABEL – 5 ⑤
SCALE: NTS

LOCATION:	INVERTERS
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



LABEL – 6 ⑥
SCALE: NTS

LOCATION:	AC DISCONNECT
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



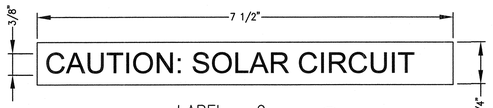
LABEL – 7 ⑦
SCALE: NTS

LOCATION:	MAIN SERVICE DSCONNECT
BACKGROUND	RED
LETTERING	WHITE
NOTES:	1 SIGN AT (E) SERVICE METER. PLACE ADDITIONAL SIGN AT SOLAR AC SYSTEM DISCONNECT WHERE NOT LOCATED WITHIN 25' & IN VIEW OF (E) SERVICE METER.

ARC FLASH WITH EXAMPLE TEXT AND DIMENSIONS

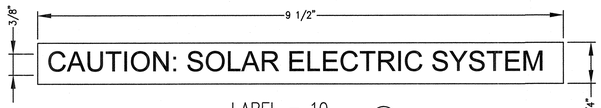
LABEL – 8 ⑧
SCALE: NTS

LOCATION:	INVERTER DISCONNECTS, AC DISCONNECT, PANEL
BACKGROUND	WHITE, RED OR YELLOW
LETTERING	BLACK AND/OR RED
NOTES:	



LABEL – 9 ⑨
SCALE: NTS

LOCATION:	DC ENCLOSURES, RACEWAYS AND CONDUITS
BACKGROUND	RED
LETTERING	WHITE
NOTES:	EXPOSED CONDUIT EVERY 10 FT.



LABEL – 10 ⑩
SCALE: NTS

LOCATION:	MAIN SERVICE DISCONNECT
BACKGROUND	RED
LETTERING	WHITE
NOTES:	

WARNING LABELS & MARKING NOTES:

1. MARKING IS REQUIRED ON INTERIOR AND EXTERIOR DIRECT–CURRENT (DC) CONDUIT, ENCLOSURES, RACEWAYS, CABLE ASSEMBLIES, JUNCTION BOXES, COMBINER BOXES AND DISCONNECTS.
2. THE MATERIALS USED FOR MARKING SHALL BE REFLECTIVE, WEATHER RESISTANT AND SUITABLE FOR THE ENVIRONMENT. MARKING AS REQUIRED IN SECTIONS 605.11.1.2 THROUGH 605.11.1.4 SHALL HAVE ALL LETTERS CAPITAL SIZED WITH A MINIMUM HEIGHT OF 3/8 INCH (9.5 MM) WHITE ON RED BACKGROUND.
3. THE MARKING SHALL CONTAIN THE WORDS "WARNING: PHOTOVOLTAIC POWER SOURCE."
4. THE MARKING SHALL BE PLACED ADJACENT TO THE MAIN SERVICE DISCONNECT IN A LOCATION CLEARLY VISIBLE FROM THE LOCATION WHERE THE DISCONNECT IS OPERATED.
5. MARKING SHALL BE PLACED ON INTERIOR AND EXTERIOR DC CONDUIT. RACEWAYS, ENCLOSURES AND CABLE ASSEMBLIES EVERY 10 FEET (3048 MM), WITHIN 1 FOOT (305 MM) OF TURNS OR BENDS AND WITHIN 1 FOOT (305 MM) ABOVE AND BELOW PENETRATIONS OF ROOF/CEILING ASSEMBLIES, WALLS OR BARRIERS.

CLIENT

Bakersfield City School District
1300 Baker St., Bakersfield, CA 93305

PROJECT LOCATION

PIONEER DRIVE ELEMENTARY SCHOOL
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BAKERSFIELD, CA 93306

DESIGNER

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CONSULTANT

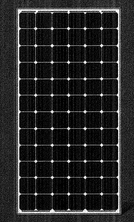
COLLINS ELECTRICAL COMPANY INC.
1302 Channel Drive
West Sacramento, CA 95691
T 916.567.1100

SHEET TITLE

TYPICAL ELECTRICAL SOLAR WARNING LABELS

SHEET NUMBER

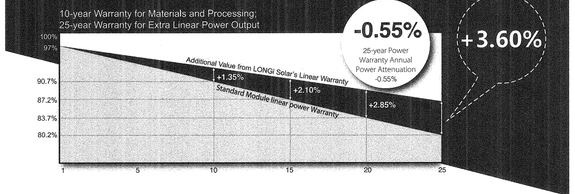
E5.0



LR6-72HV
330~350M

High Efficiency Mono Technology (1500V Compatible)

with advanced 5BB design to improve power output



Complete System and Product Certifications

IEC 61215, IEC61730, UL1703

ISO 9001:2008: ISO Quality Management System

ISO 14001: 2004: ISO Environment Management System

TS62941: Guideline for module design qualification and type approval

OHSAS 18001: 2007 Occupational Health and Safety

Positive power tolerance (0 ~ +5W) guaranteed

High module conversion efficiency (up to 18.1%)

Better energy yield with excellent low irradiance performance and temperature coefficient

Solid PID resistance ensured by solar cell process optimization and careful module BOM selection

Adaptable to harsh environment: passed rigorous salt mist and ammonia tests

Robust frame (40mm) withstands mechanical loading of 5400Pa for snow load on front and 2400Pa for wind load on rear side

* Specifications subject to technical changes and tests. LONGi Solar reserves the right of interpretation.

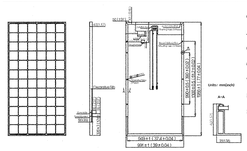
LONGi Solar

Room 201, Building B, Sandhill Plaza, Lane 2290, Zuchongzhi Road, Pudong District, Shanghai, 201203
Tel: + 86-21-61047332 Fax: +86 21- 61047377 E-mail: module@longi-silicon.com
Facebook: www.facebook.com/LONGI Solar

20170808

LR6-72HV **330~350M**

Design （mm）	Mechanical Parameters	Operating Parameters



Cell Orientation: 72 (6×12)

Junction Box: IP67, three diodes

Output Cable: 4mm², 1200mm in length

Connector: *MC4 or MC4 compatible*

Weight: 22.2kg

Dimension: 1956×991×40mm

Packaging: 26pcs per pallet

Operational Temperature: -40 C ~ +85 C

Power Output Tolerance: 0 ~ +5 W

Maximum System Voltage: DC1500V (IEC)

Maximum Series Fuse Rating: 15A

Nominal Operating Cell Temperature: 45±2 C

Application Class: Class A

Electrical Characteristics

Model Number	LR6-72HV-330M		LR6-72HV-335M		LR6-72HV-340M		LR6-72HV-345M		LR6-72HV-350M	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	330	238.6	335	242.2	340	245.8	345	249.4	350	253.0
Open Circuit Voltage (Voc/V)	46.1	42.4	46.3	42.6	46.5	42.8	46.7	43	46.9	43.1
Short Circuit Current (Isc/A)	9.30	7.50	9.40	7.58	9.49	7.65	9.58	7.72	9.68	7.80
Voltage at Maximum Power (Vmp/V)	37.6	34.0	37.7	34.1	37.9	34.2	38.1	34.5	38.2	34.6
Current at Maximum Power (Imp/A)	8.78	7.02	8.89	7.11	8.97	7.18	9.05	7.24	9.16	7.32
Module Efficiency(%)	17.0		17.3		17.5		17.8		18.1	

STC (Standard Testing Conditions): Irradiance 1000W/m², Cell Temperature 25 C, Spectra at AM1.5

NOCT (Nominal Operating Cell Temperature): Irradiance 800W/m², Ambient Temperature 20 C, Spectra at AM1.5, Wind at 1m/S

Temperature Ratings（ STC ）

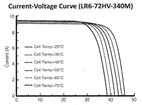
Temperature Coefficient of Isc	+0.059% / C
Temperature Coefficient of Voc	-0.330% / C
Temperature Coefficient of Pmax	-0.410% / C

Mechanical Loading

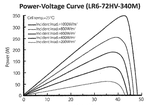
Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm Hailstone at the speed of 23m/s

I-V Curve

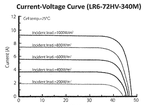
Current-Voltage Curve (LR6-72HV-340M)



Power-Voltage Curve (LR6-72HV-340M)



Current-Voltage Curve (LR6-72HV-340M)



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Facebook: www.facebook.com/LONGI Solar

Note: Due to continuous technical innovation, R&D and improvement, technical data above mentioned may be of modification accordingly. LONGi Solar have the sole right to make such modification at anytime without further notice; Demanding party shall request for the latest datasheet for such as contract need, and make it a consisting and binding part of lawful documentation duly signed by both parties.

20170808

NEW

CanadianSolar

THREE PHASE STRING INVERTER 25-40 KW

CSI-25KTL-GS-FL | CSI-30KTL-GS-FL | CSI-36KTL-GS-FL | CSI-40KTL-GS-FL

Canadian Solar's grid-tied, transformer-less string inverters help accelerate the use of three-phase string architecture for commercial rooftop and small ground-mount applications. An NRTL approved, cost-effective alternative to central inverters, these inverters are modular design building blocks that provide high yield and enable significant BoS cost savings. They provide up to 98.6% conversion efficiency, a wide operating range of 200-800 V_{DC}, and four MPPTs for maximum energy harvest.

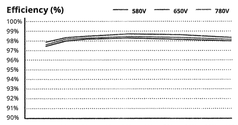
10 years **Standard warranty, extension up to 20 years**

KEY FEATURES

- Maximum efficiency of 98.6%, CEC efficiency of 98.3%
- 4 MPPTs to achieve higher system efficiency
- Transformerless design
- High switching frequency and ultra fast MPPT (<5 sec.) for maximum efficiency over a wide load range

EFFICIENCY CURVE

CSI-40KTL-GS-FL@480 V



HIGH RELIABILITY

- Advanced thermal design
- Ground-fault detection and interruption circuit
- AFCI Integrated (per UL1699B, factory enabled option)

BROAD ADAPTIBILITY

- NEMA 4X (IP65), outdoor application
- Utility interactive controls: active power derating, reactive power control and over frequency derating
- Integrated wiring box design
- Integrated DC and AC load rated disconnects
- Wide MPPT range for flexible string sizing
- 90 degree installation angle
- AC terminals compatible with copper and aluminum conductors (Al with bimetallic terminal)
- Supports up to 8 DC string inputs (2 per MPPT)

CANADIAN SOLAR (USA), INC. is committed to providing high quality solar products, solar system solutions and services to customers around the world. As a leading PV project developer and manufacturer of solar modules with over 25 GW deployed around the world since 2001, Canadian Solar Inc. (NASDAQ: CSIQ) is one of the most bankable solar companies worldwide.

*For detailed information, please refer to the Installation Manual.

CANADIAN SOLAR (USA), INC.
3000 Oak Road, Suite 400, Walnut Creek, CA 94597, USA | www.canadiansolar.com/na | sales.us@canadiansolar.com

SYSTEM/TECHNICAL DATA				
MODEL NAME	**CSI-25KTL-GS-FL**	**CSI-30KTL-GS-FL**	**CSI-36KTL-GS-FL**	**CSI-40KTL-GS-FL**
DC INPUT				
Max. PV Power	37.5 kW (13.5 kW/MPPT)	45 kW (13.5 kW/MPPT)	54 kW (13.5 kW/MPPT)	54 kW (13.5 kW/MPPT)
Max. DC Input Voltage	1000 V_{DC}			
Operating DC Input Voltage Range	200-800 V_{DC}			
Start-up DC Input Voltage/Power	350 V			
Number of MPP Trackers	4			
MPPT Voltage Range	347-800 V_{DC}	417-800 V_{DC}	500-800 V_{DC}	556-800 V_{DC}
Operating Current (Imp)	72 A (18 A per MPPT)			
Max. Input Current (Isc)	112.4 A (28.1 A per MPPT)			
Number of DC Imputs	8 (2 per MPPT)			
DC Disconnection Type	Load rated DC switch			
AC OUTPUT				
Rated AC Output Power	25 kW	30 kW	36 kW	40 kW
Max. AC Output Power	27.5 kW	33 kW	40 kW	44 kW
Rated Output Voltage	480 V_{AC}			
Output Voltage Range*	422.4 - 528 V_{AC}			
Grid Connection Type	3 Φ/PE			
Nominal AC Output Current @480 Vac	30.1 A	36.1 A	43.3 A	48.1 A
Rated Output Frequency	60 Hz			
Output Frequency Range*	59.5 - 60.5 Hz			
Power Factor	1 default (±0.8 adjustable)			
Current THD	< 3 %			
AC Disconnection Type	Load rated AC switch			
SYSTEM				
Topology	Transformerless			
Max. Efficiency	98.6 %			
CEC Efficiency	98.3 %			
Night Consumption	< 1 W			
ENVIRONMENT				
Protection Degree	NEMA 4X			
Cooling	Natural Convection Cooling			
Operating Temperature Range	-13 ° F to + 140 ° F / -25 ° C to +60 ° C			
Storage Temperature Range	-40 ° F to + 158 ° F / -40 ° C to +70 ° C			
Operating Humidity	0 - 100 % condensing			
Operating Altitude	13,123.4 ft / 4000 m			
Audible Noise	<30 dBA @ 1 m			
DISPLAY AND COMMUNICATION				
Display	LCD + LED			
Communication	Standard: RS485 (Modbus)			
MECHANICAL DATA				
Dimensions (W / H / D)	23.4 x 37.2 x 14.4 in / 595 x 945 x 356.5 mm			
Weight	147.7 lb / 67 kg			
Installation Angle	90 degrees from horizontal			
DC Inputs	15 A standard			
SAFETY				
Safety and EMC Standard	UL1741-SA, UL1699B, CSA-C22.2 No. 107.1-01, IEEE1547; FCC PART 15			
Grid Standard	IEEE1547, Rule 21			
Smart-Grid Features	Voltage-Ride Thru, Frequency-Ride Thru, Soft-Start, Volt-Var, Frequency-Watt, Volt-Watt			

*The "Output Voltage Range" and "Output Frequency Range" may differ according to specific grid standard.

The specification and key features described in this datasheet may deviate slightly and are not guaranteed. Due to on-going innovation, research and product enhancement, Canadian Solar Inc. reserves the right to make any adjustment to the information described herein at any time without notice. Please always obtain the most recent version of the datasheet which shall be duly incorporated into the binding contract made by the parties governing all transactions related to the purchase and sale of the products described herein.

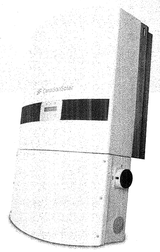
Caution: For professional use only. The installation and handling of PV equipment requires professional skills and should only be performed by qualified professionals. Please read the safety and installation instructions before using the product.

NEW

CanadianSolar

THREE PHASE STRING INVERTER 50-66 KW

CSI-50KTL-GS-FL | CSI-50KTL-GS | CSI-60KTL-GS | CSI-66KTL-GS



Canadian Solar's grid-tied, transformer-less string inverters help accelerate the use of three-phase string architecture for commercial rooftop and small ground-mount applications. An NRTL approved, cost-effective alternative to central inverters, these inverters are modular design building blocks that provide high yield and enable significant BoS cost savings. They provide up to 98.8% conversion efficiency, a wide operating range of 200-850 V_{DC}, and four MPPTs for maximum energy harvest.

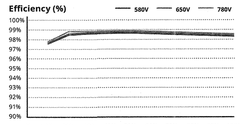
10 years **Standard warranty, extension up to 20 years**

KEY FEATURES

- Maximum efficiency of 98.8%, CEC efficiency of 98.4%
- 4 MPPTs to achieve higher system efficiency
- Transformerless design
- High switching frequency and ultra fast MPPT (<5 sec.) for maximum efficiency over a wide load range

EFFICIENCY CURVE

CSI-66KTL-GS@480 V



HIGH RELIABILITY

- Advanced thermal design with fan assisted cooling
- Ground-fault detection and interruption circuit
- AFCI Integrated (per UL1699B, factory enabled option)

BROAD ADAPTBILITY

- NEMA 4X (IP65), outdoor application
- Utility interactive controls: active power derating, reactive power control and over frequency derating
- Integrated wiring box design
- Integrated DC and AC load rated disconnects
- Wide MPPT range for flexible string sizing
- 15-90 degree installation angle
- AC terminals compatible with copper and aluminum conductors (Al with bimetallic terminal)
- Supports up to 12 or 16 DC string inputs (3 or 4 per MPPT)

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*For detailed information, please refer to the Installation Manual.

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SYSTEM/TECHNICAL DATA				
MODEL NAME	**CSI-50KTL-GS-FL**	**CSI-50KTL-GS**	**CSI-60KTL-GS**	**CSI-66KTL-GS**
DC INPUT				
Max. PV Power	64 kW (16 kW/MPPT)	75 kW (22.5 kW/MPPT)	90 kW (22.5 kW/MPPT)	90 kW (22.5 kW/MPPT)
Max. DC Input Voltage	1000 V_{DC}			
Operating DC Input Voltage Range	200-850 V_{DC}			
Start-up DC Input Voltage/Power	200 V			
Number of MPP Trackers	4			
MPPT Voltage Range	568-850 V_{DC}		526-850 V_{DC}	579-850 V_{DC}
Operating Current (Imp)	88 A (22 A per MPPT)		114 A (28.5 A per MPPT)	
Max. Input Current (Isc)	137.2 A (34.3 A per MPPT)		178 A (44.5 A per MPPT)	
Number of DC Imputs	12 (3 per MPPT)		16 (4 per MPPT)	
DC Disconnection Type	Load rated DC switch			
AC OUTPUT				
Rated AC Output Power	50 kW	50 kW	60 kW	66 kW
Max. AC Output Power	50 kW	50 kW	60 kW	66 kW
Rated Output Voltage	480 V_{AC}			
Output Voltage Range*	422.4 - 528 V_{AC}			
Grid Connection Type	3 Φ/PE			
Nominal AC Output Current @480 Vac	60.2 A		72.2 A	79.4 A
Rated Output Frequency	60 Hz			
Output Frequency Range*	59.5 - 60.5 Hz			
Power Factor	1 default (±0.8 adjustable)			
Current THD	< 3 %			
AC Disconnection Type	Load rated AC switch			
SYSTEM				
Topology	Transformerless			
Max. Efficiency	98.8 %	98.8 %	98.7 %	98.8 %
CEC Efficiency	98.4 %			
Night Consumption	< 1 W			
ENVIRONMENT				
Protection Degree	NEMA 4X			
Cooling	Natural Convection Cooling	Intelligent Redundant Cooling		
Operating Temperature Range	-13 ° F to + 140 ° F / -25 ° C to +60 ° C			
Storage Temperature Range	-40 ° F to + 158 ° F / -40 ° C to +70 ° C			
Operating Humidity	0 - 100 %			
Operating Altitude	13,123.4 ft / 4000 m			
Audible Noise	<60 dBA @ 1 m			
DISPLAY AND COMMUNICATION				
Display	LCD + LED			
Communication	Standard: RS485 (Modbus)			
MECHANICAL DATA				
Dimensions (W / H / D)	24.8 x 40.7 x 13.9 in / 630 x 1034 x 354 mm			
Weight	165 lb / 74.8 kg	172 lb / 78 kg		
Installation Angle	90 degrees from horizontal	15-90 degrees from horizontal		
DC Inputs	15 A standard			
SAFETY				
Safety and EMC Standard	UL1741-SA, UL1699B, CSA-C22.2 No. 107.1-01, IEEE1547; FCC PART 15			
Grid Standard	IEEE1547, Rule 21			
Smart-Grid Features	Voltage-Ride Thru, Frequency-Ride Thru, Soft-Start, Volt-Var, Frequency-Watt, Volt-Watt			

*The "Output Voltage Range" and "Output Frequency Range" may differ according to specific grid standard.

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CLIENT

Bakersfield City School District
1300 Baker St., Bakersfield, CA 93305

PROJECT LOCATION

PIONEER DRIVE ELEMENTARY SCHOOL
4404 PIONEER DR.
BAKERSFIELD, CA 93306

DESIGNER

FOREFRONT POWER
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ARCHITECT

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Roseville, CA 95661
T 916.772.1800
3050 Pullman Street
Costa Mesa, CA 92626
T 714.338.1000

PROFESSIONAL STAMP

LICENSED ARCHITECT MARK S. BELLO C 20677 Exp: Mar.31, 2017 STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER R.J.HARDIN NO. 9125 ELECTRICAL STATE OF CALIFORNIA

AGENCY APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC FLS SS CY
Date JUL 3 1 2018

ISSUE

MARK	DATE	DESCRIPTION
–	7/31/2018	DSA SUBMITTAL

PROJECT No : ATI PROJ. #

DRAWN BY: HDE

CHECKED BY: RJH

SCALE: AS NOTED

CONSULTANT

COLLINS ELECTRICAL COMPANY INC.
1902 Channel Drive
West Sacramento, CA 95691
T 916.567.1100

SHEET TITLE

ELECTRICAL SOLAR EQUIPMENT CUT SHEETS

SHEET NUMBER

E6.0

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E (Created 9/17) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTO-E
This document is used to demonstrate compliance with requirements in §110.9, §130.0, §130.2, §140.7, and §141.0(b)2I for outdoor lighting scopes using the prescriptive path.	
Project Name: Pioneer Elementary School	Report Page: Page 1 of 6
Project Address: 4404 Pioneer Dr.	Date Prepared: 7/9/2018

A. GENERAL INFORMATION

01	Project Location (city)	Bakersfield	04	Total Illuminated Hardscape Area (ft²)	8,488
02	Climate Zone	13			

03 Outdoor Lighting Zone per Title 24, Part 1 §10-114 or as designated by Authority Having Jurisdiction (AHJ):

☐ LZ-0: Very Low - Undeveloped Parkland ☐ LZ-2: Moderate - Rural Areas ☐ LZ-4: High - Must be reviewed by CA Energy Commission for Approval
☐ LZ-1: Low - Developed Parkland ☑ LZ-3: Moderately High - Urban Areas

B. PROJECT SCOPE
Table Instructions: Include any outdoor lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.7 or §141.0(b)2I, for alterations.

My project consists of:

01	02
☑ New Lighting System	Must Comply with Allowances from §140.7.
☐ Altered Lighting System	Is your alteration increasing the connected lighting load (Watts)? ○ Yes ○ No

† *FOOTNOTES: % of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100*

C. COMPLIANCE RESULTS
Table Instructions: If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

Calculation of Total Allowed Lighting Power (Watts) §140.7 or §141.0(b)2L												Compliance Results
01		02		03		04		05	OR	06	=	07	≥	08	09
General Hardscape Allowance §140.7(d)1.	+	Per Application §140.7(d)2	+	Sales Frontage §140.7(d)2	+	Ornamental §140.7(d)2	+	Per Specific Area §140.7(d)2		Existing Power §141.0(b)2L		**Total Allowed** (Watts)		**Total Actual** (Watts)	**07 Must be ≥ 08**
(See Table I)		(See Table J)		(See Table K)		(See Table L)		(See Table M)		(See Table N)				(See Table F)	
1,036.62	+		+		+		+		OR		=	1,036.62	≥	150	**COMPLIES**
Cutoff Compliance (See Table G for Details)														**Not Applicable**	
Controls Compliance (See Table H for Details)														**COMPLIES**	

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E (Created 9/17) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTO-E
Project Name: Mt. Vernon Elementary School	Report Page: Page 2 of 6
Project Address: 2161 Potomac Ave.	Date Prepared: 7/6/2018

D. EXCEPTIONAL CONDITIONS
This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

No exceptional conditions apply to this project.

E. ADDITIONAL REMARKS
This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. OUTDOOR LIGHTING FIXTURE SCHEDULE
This Section Does Not Apply

F. OUTDOOR LIGHTING FIXTURE SCHEDULE
Table Instructions: For new or altered lighting systems demonstrating compliance with §140.7 (ie Table I has expanded for input), include all luminaires being installed and any existing luminaires remaining or being moved within the spaces covered by the permit application in the Table below. For altered lighting systems using the Existing Power method per §141.0(b)2L (ie Table N has expanded for input), include only new luminaires being installed and replacement luminaires being installed as part of the project scope (ie, do not include existing luminaires remaining or existing luminaires being moved).

Designed Wattage:

01	02	03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description	Watts per luminaire†	How Wattage is determined	Total number luminaires	Luminaire Status‡	Excluded per §140.7[a]	Design Watts	Cutoff Req. > 150W §130.2(b)‡	Field Inspector	
									Pass	Fail
A	30W LED	30	Mfr. Spec†	4	New	☐	120		☐	☐
						Total Designed Watts:	**120**			

* NOTES: Selections with a * require a note in the space below explaining how compliance is achieved.
EX: Luminaire is lighting a statue; EXCEPTION 2 to §130.2(b).

G. CUTOFF REQUIREMENTS (BUG)
This Section Does Not Apply

H. OUTDOOR LIGHTING CONTROLS
This Section Does Not Apply

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E (Created 9/17) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTO-E
Project Name: Pioneer Elementary School	Report Page: Page 3 of 6
Project Address: 4404 Pioneer Dr.	Date Prepared: 7/9/2018

H. OUTDOOR LIGHTING CONTROLS
Table Instructions: Complete this table demonstrating compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (ie untouched) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application.
*When an option having a * is selected, the notes section of this table must be completed. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank. For each requirement in columns 02 through 07, do not leave the field blank, instead select NA or Exempt* from the dropdown list to indicate not applicable or an exemption.*

Mandatory Controls

01	02	03	04	05	06	07	08	
Area Description	Motion Sensor: Incandescent>100W §130.2[a]	Shut-Off §130.2(c)1	Auto-Schedule §130.2(c)2	Motion Sensor §130.2(c)3	Sales Frontage §130.2(c)4	Façade, Ornament, Outdoor Dining §130.2(c)5	Field Inspector	
							Pass	Fail
Exterior Lights	NA: No Incand>100W	Photocontrol	Yes	Yes	NA: No Sales Front Ltg	No Applicable Lt	☐	☐

*NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.
EX: Not permitted by health & safety to be turned off; EXCEPTION 1 to §130.2(c).

I. LIGHTING POWER ALLOWANCE (per §140.7)
Table Instructions: Please complete this table for areas using the allowance calculations per §140.7. General Hardscape Allowance is per Table 140.7-A while "Use it or lost it" Allowances are per Table 140.7-B. Indicate which allowances are being used to expand sections for user input. Luminaires that qualify for one of the "Use it or lose it" allowances shall not qualify for another "Use it or lose it" allowance.

	01				
		"Use it or lose it" Allowance (Watts)			
☑ General Hardscape Allowance	☐ Per Application	☐ Sales Frontage	☐ Ornamental	☐ Per Specific Area	
Table I (below)	Table J	Table K	Table L	Table M	

Calculated General Hardscape Lighting Power Allowance per Table 140.7-A

02	03	04	05	06	07	08	09
Area Description	Area Wattage Allowance (AWA)		Linear Wattage Allowance (LWA)				Total General AWA + LWA (Watts)
	Illuminated Area (ft²)	Allowed Density (W/ft²)	Area Allowance (Watts)	Perimeter Length (lf)	Allowed Density (W/lf)	Linear Allowance (Watts)	
Solar Canopies	8,488	0.04	339.52	506	0.35	177.1	516.62
						Initial Wattage Allowance for Entire Site (Watts):	**520**
						Total General Hardscape Allowance (Watts):	**1,036.62**

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E (Created 9/17) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTO-E
Project Name: Mt. Vernon Elementary School	Report Page: Page 4 of 6
Project Address: 2161 Potomac Ave.	Date Prepared: 7/6/2018

J. LIGHTING ALLOWANCE: PER APPLICATION
This Section Does Not Apply

K. LIGHTING ALLOWANCE: SALES FRONTAGE
This Section Does Not Apply

L. LIGHTING ALLOWANCE: ORNAMENTAL
This Section Does Not Apply

M. LIGHTING ALLOWANCE: PER SPECIFIC AREA
This Section Does Not Apply

N. EXISTING CONDITIONS POWER ALLOWANCE (alterations only)
This Section Does Not Apply

O. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION
Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at http://www.energy.ca.gov/2015publications/CEC-400-2015-033/appendices/forms/NRCI

YES	NO	Form/Title	Field Inspector	
			Pass	Fail
◉	○	NRCI-LTO-01-E - Must be submitted for all buildings.	☐	☐
◉	○	NRCI-LTO-02-E - Must be submitted for a lighting control system; or for an Energy Management Control System (EMCS), to be recognized for compliance.	☐	☐

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E (Created 9/17) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTO-E
Project Name: Mt. Vernon Elementary School	Report Page: Page 5 of 6
Project Address: 2161 Potomac Ave.	Date Prepared: 7/6/2018

P. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE
Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

YES	NO	Form/Title	Field Inspector	
			Pass	Fail
◉	○	NRCA-LTO-02-A - Must be submitted for all outdoor lighting controls except for alterations where controls area added to ≤ 20 luminaires.	☐	☐

STATE OF CALIFORNIA
Outdoor Lighting
NRCC-LTO-E (Created 9/17) — CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTO-E
Project Name: Mt. Vernon Elementary School	Report Page: Page 6 of 6
Project Address: 2161 Potomac Ave.	Date Prepared: 7/6/2018

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

Documentation Author Name:	Richard J. Hardin	Documentation Author Signature:	
Company:	Hardin-Davidson Engineering	Signature Date:	07/06/2018
Address:	356 Pollasky Ave. Suite 200	CEA/ HERS Certification Identification (if applicable):	E9125
City/State/Zip:	Clovis, CA 93612	Phone:	(559) 323-4995

RESPONSIBLE PERSON'S DECLARATION STATEMENT
I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name:	Rich Hardin	Responsible Designer Signature:	
Company :	Hardin Davidson Engineering	Date Signed:	07/06/2018
Address:	356 Pollasky Ave, Suite 200	License:	E9125
City/State/Zip:	Clovis, CA 93612	Phone:	559.323.4995

CLIENT

Bakersfield City School District
1300 Baker St., Bakersfield, CA 93305

PROJECT LOCATION

PIONEER DRIVE ELEMENTARY SCHOOL
4404 PIONEER DR.
BAKERSFIELD, CA 93306

DESIGNER

FOREFRONT POWER
100 Montgomery Street #1400
San Francisco, CA 94104
(855) 204-5083
www.ForeFrontPower.com

ARCHITECT

ATI ARCHITECTS & ENGINEERS
4750 Willow Road Suite 250
Pleasanton, CA 94588
T 925.648.8500
2510 Douglas Boulevard
Roseville, CA 95661
T 916.772.1100
3050 Pullman Street
Costa Mesa, CA 92626
T 714.338.1000
www.atiae.com

PROFESSIONAL STAMP

LICENSED ARCHITECT MARK S. BELLO C 20677 Exp: Mar. 31, 2017 STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER R.J. HARDIN NO. 9125 ELECTRICAL STATE OF CALIFORNIA

AGENCY APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC FLS SS EV
Date JUL 31 2018

ISSUE

MARK	DATE	DESCRIPTION
–	7/31/2018	DSA SUBMITTAL

PROJECT No : ATI PROJ #
DRAWN BY: HDE
CHECKED BY: RJH
SCALE: AS NOTED

CONSULTANT

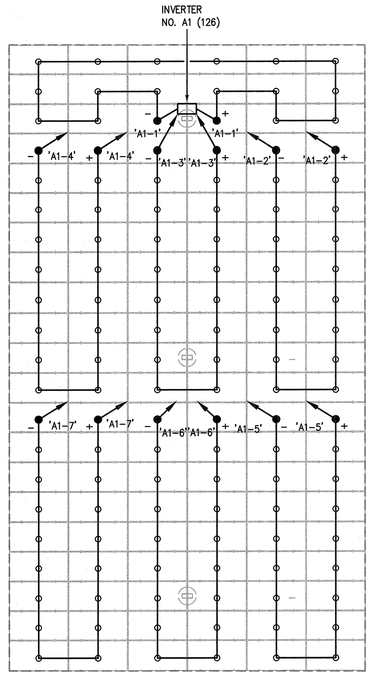
COLLINS ELECTRICAL COMPANY INC.
1902 Channel Drive
West Sacramento, CA 95691
T 916.567.1100

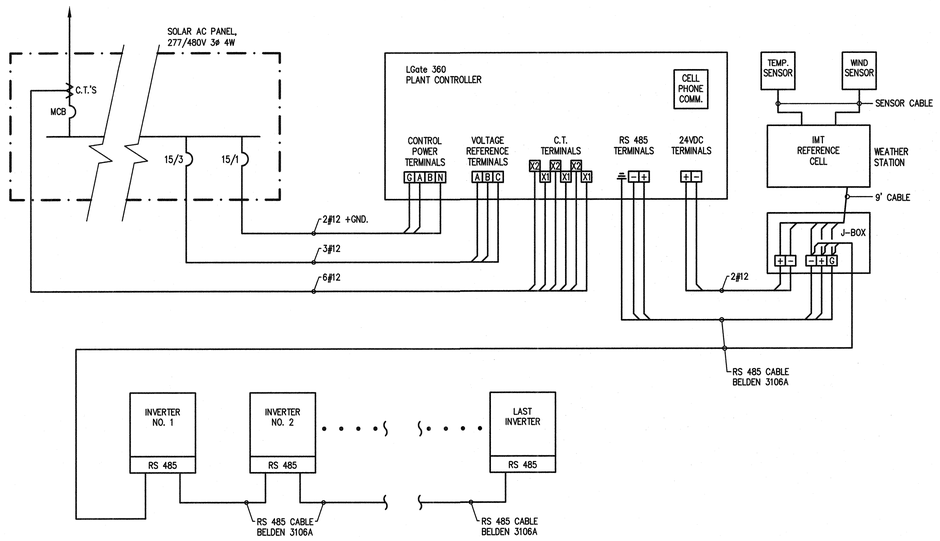
SHEET TITLE

LIGHTING TITLE 24 COMPLIANCE FORMS

SHEET NUMBER

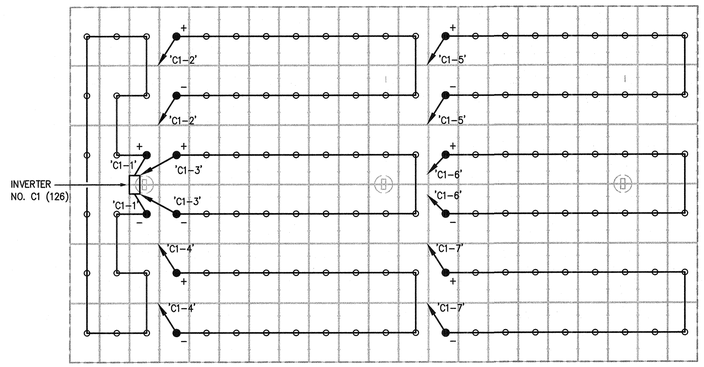
E7.0

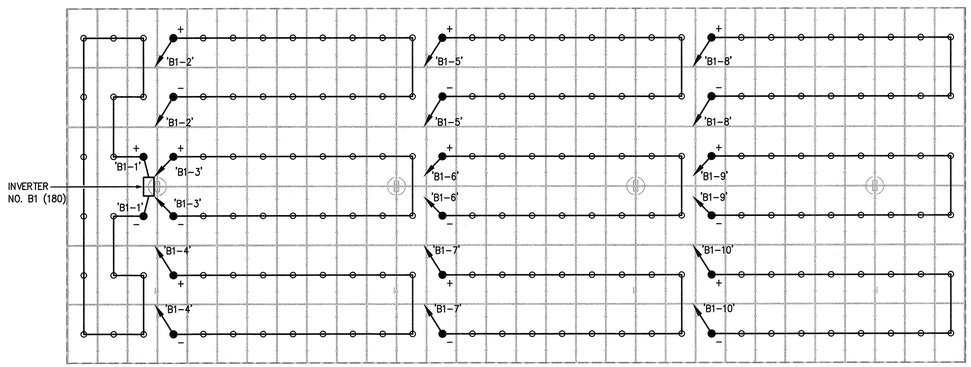


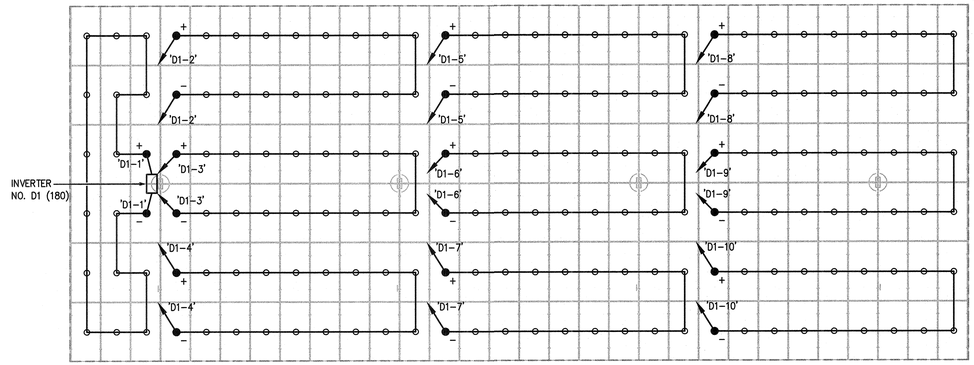


TYPICAL MONITORING DATA WIRING DIAGRAM

SCALE: NONE







SOLAR STRING CABLING PLAN

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

NORTH

CLIENT

Bakersfield City School District
1300 Baker St., Bakersfield, CA 93305

PROJECT LOCATION

PIONEER DRIVE ELEMENTARY SCHOOL
4404 PIONEER DR.
BAKERSFIELD, CA 93306

DESIGNER

FOREFRONT POWER
100 Montgomery Street #1400
San Francisco, CA 94104
(855) 204-5083
www.ForeFrontPower.com

ARCHITECT

ATI ARCHITECTS + ENGINEERS
www.atiae.com
4750 Willow Road Suite 250
Pleasanton, CA 94588
T 925.640.8800
2510 Douglas Boulevard
Roseville, CA 95661
T 916.772.1800
3050 Pullman Street
Costa Mesa, CA 92626
T 714.338.1600

PROFESSIONAL STAMP

LICENSED ARCHITECT MARK S. BELLO C 20677 Exp: Mar. 31, 2017 STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER R. J. HARDIN NO. 9125 ELECTRICAL STATE OF CALIFORNIA

AGENCY APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC FLS SS CT
Date JUL 3 1 2018

ISSUE

MARK	DATE	DESCRIPTION
–	7/31/2018	DSA SUBMITTAL

PROJECT No :	ATI PROJ. #
DRAWN BY:	HDE
CHECKED BY:	RJH
SCALE:	AS NOTED

CONSULTANT

COLLINS ELECTRICAL COMPANY INC.
1902 Channel Drive
West Sacramento, CA 95691
T 916.567.1100

SHEET TITLE

SOLAR ARRAY ELECTRICAL STRING CABLING PLAN

SHEET NUMBER

ES1.0

ULTIMATE GUARDIAN 3.3 [3]

PHOTOVOLTAIC SUPPORT STRUCTURES

PC OWNERSHIP

STRUCTURAL ENGINEERING FIRM

4 STEL ENGINEERING
STRUCTURAL ENGINEERING

109 EAST ESCALONES
SAN CLEMENTE, CA 92672

PHONE: (949) 388-9333
FAX: (949) 388-3773

STRUCTURAL ENGINEER OF RECORD: DUSTIN K. ROSEPINK, SE 5885

POINT OF CONTACT: BRADLEY STEVENS

STRUCTURAL STEEL CONTRACTOR

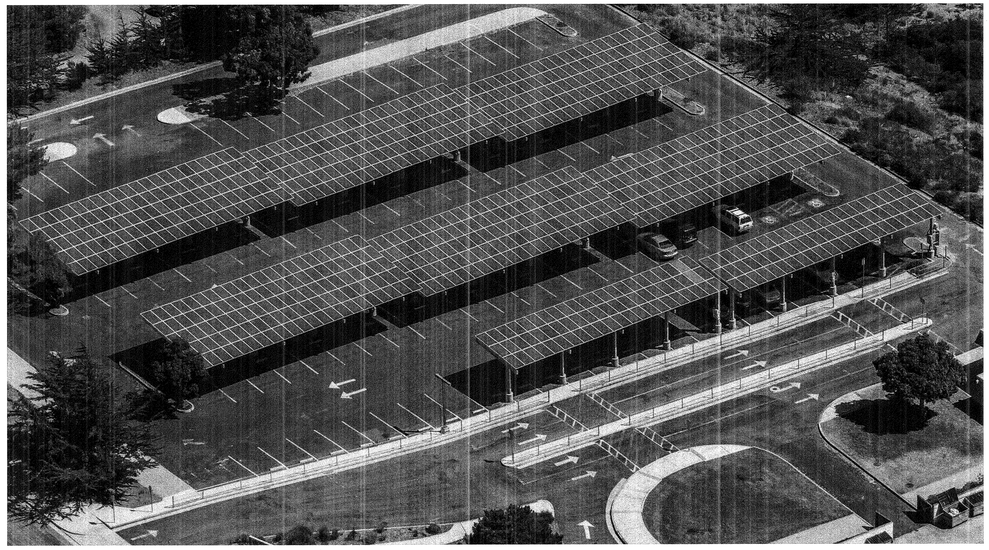
MBARC CONSTRUCTION INC.

674 RANCHEROS DR
SAN MARCOS, CA. 92069

PHONE: (760) 744-4131
FAX: (760) 744-4449

LIC # 869960
B AND C51

POINT OF CONTACT: ERIK KRIVOKOPICH



STANDARD NOTES FOR PC USE

- 4 S.T.E.L. ENGINEERING, INC. SHALL ALWAYS BE GIVEN THE OPPORTUNITY TO BID THE DSA SUBMITTAL PACKAGE (I.E. TO ACT AS THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE).
- FOR CONSTRUCTION COST INFORMATION, CONTACT M BAR C CONSTRUCTION, INC.
- CUSTOM SIZES AND LOADING REQUIRE SUPPLEMENTARY SHOP DRAWINGS AND CALCULATIONS.

NOTES TO OTC PLAN REVIEWER AND DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE

1. THIS PC CONTAINS MEMBERS DESIGNED TO THREE SEPARATE SETS OF SEISMIC CRITERIA.
   CRITERIA #1: Ss=1.7, S1=1.39, Cs=0.907, R=1.25
   ~~CRITERIA #2: Ss=3.2, S1=1.39, Cs=0.853, R=1.25~~
   ~~CRITERIA #3: Ss=3.2, S1=1.39, Cs=1.707, R=1.25~~
   ~~CRITERIA #4: Ss=1.6, S1=1.39, Cs=0.907, R=1.25~~ [3]
   THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE IS RESPONSIBLE FOR SELECTING AND UTILIZING THE CORRECT MEMBER SHEETS FOR THE SITE-SPECIFIC CONDITION SUCH THAT THE SITE-SPECIFIC Ss AND S1 ARE LESS THAN THOSE CONTAINED WITHIN ONE OF THE SETS OF CRITERIA; OR MEETS THE REQUIREMENTS OF NOTE 2 OF DESIGN PARAMETERS ON S-2.
2. THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE IS RESPONSIBLE FOR VERIFYING SITE-SPECIFIC WIND PARAMETERS AT ANY AND ALL SITES WHERE THIS PC IS USED. THIS PC IS DESIGNED BASED ON 110 mph EXPOSURE C. SEE NOTE 1 OF DESIGN CRITERIA ON S-2.
3. SITE SPECIFIC PLANS TO SHOW SITE SPECIFIC SOLAR PANEL LAYOUT.
4. SITE SPECIFIC SOLAR PANEL LAYOUT SHALL HAVE MAXIMUM DIMENSION TO THE OUTSIDE EDGES OF SOLAR PANELS OR STRUCTURAL STEEL – WHICHEVER IS GREATER – LESS THAN THE MAXIMUM DIMENSIONS OF THE STRUCTURES SHOWN ON THE PC PLANS (OR CHARTS).
5. IF THE SNOW LOAD OPTION IS USED THEN Pg, Pf, Ps, Ce, I, Ct SHALL BE LISTED ON SITE SPECIFIC PLANS.
6. IF THE SNOW LOAD OPTION IS USED THEN THE SITE SPECIFIC MAXIMUM SNOW LOADING INCLUDING DRIFT MUST BE EQUAL TO 0 PSF OR LESS THAN 20 PSF BASED ON OPTION SELECTED.
7. A SITE SPECIFIC GEOTECHNICAL REPORT SHALL BE SUBMITTED JUSTIFYING THE SOILS VALUES SELECTED IF GREATER THAN 100 PCF FOR LATERAL BEARING AND 1,500 PSF FOR VERTICAL BEARING. SEE SOILS NOTES ON S-3.
8. SITE SPECIFIC DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE TO SELECT SOILS CLASS FOR SITE SPECIFIC USE.
9. IF A SOLAR PANEL CONNECTION DETAIL IS SHOWN ON THE SITE SPECIFIC PLANS IT SHALL BE IN ACCORDANCE WITH DETAILS ON S-34, S-35 AND/OR S-36 IN THE PC PLANS. IF NO SOLAR PANEL CONNECTION DETAIL IS SHOWN ON THE SITE SPECIFIC PLANS, DETAILS ON S-34, S-35 AND/OR S-36 SHALL GOVERN.
10. NO FUTURE STRUCTURAL ROOF DECK OR SHEATHING MAY BE APPLIED TO THE OPEN GRID.
11. THE MAXIMUM PSF ALLOWED FOR THE SOLAR PANEL, ELECTRICAL, AND OTHER NON STRUCTURAL ITEMS IS 3.15 PSF.
12. WET STAMPED & SIGNED COPIES OF PC PLANS ARE NOT REQUIRED FOR SITE SPECIFIC PC USE.
13. DUSTIN ROSEPINK IS NOT ACTING AS SITE SPECIFIC SEOR UNLESS HE IS THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR A SIGNED LETTER HAS BEEN SUBMITTED WITH DSA-1 FORM STATING HE ACCEPTS THE RESPONSIBILITY AS THE SEOR FOR THE SITE.
14. DUSTIN ROSEPINK WILL NOT SIGN ANY DSA FORMS (IE DSA-5, DSA-6, ECT), REVIEW OR APPROVE ANY SUBMITTALS (IE CONCRETE MIX DESIGNS, SHOP DRAWINGS, ETC.) FOR THE SITE SPECIFIC PROJECT UNLESS HE IS ACTING AS THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR THE SITE SPECIFIC STRUCTURAL ENGINEER OF RECORD PER ABOVE NOTE 13.

LEGAL INFO

SHEET INDEX

TOTAL: 46 SHEETS

BID INFORMATION

THE STEEL STRUCTURES IN THIS PC ARE PROPRIETARY TO M BAR C AND 4 S.T.E.L. ENGINEERING, INC.
THE STEEL PORTION OF WORK SHALL NOT GO OUT TO BID.

PRE-CHECK (PC) DOCUMENT

CODE: 2013 CBC

A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER
DUSTIN K. ROSEPINK
S 5885
EXP. 06-30-2016
STRUCTURAL
STATE OF CALIFORNIA

DATE SIGNED
July 2, 2018

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
A 03 119217
AC ✓ FLS ✓ SS ✓
DATE MAR 31 2018
SITE SPECIFIC DSA APPROVAL

~~IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP. P. C. 04-119125
Revision #3
AC – FLS – SS PR
DATE 7/2/2018~~

MBARC CONSTRUCTION INC.
674 RANCHEROS DR
SAN MARCOS, CA 92069
PHONE: (760) 744-4131
FAX: (760) 744-4449
LIC # 869960
B AND C51

4 STEL ENGINEERING
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109 EAST ESCALONES
SAN CLEMENTE, CA 92672
PHONE: (949) 388-9333
FAX: (949) 388-3773

PHOTOVOLTAIC STRUCTURES
COVER SHEET 1

DRAWN MAP
CHECKED DKR
~~DATE~~ 7/2/2018 [3]
4STEL JOB NO. 13-1010
SHEET S-1
1 OF 46 SHEETS

PHOTOVOLTAIC CANOPIES

CONSTRUCTION OPTIONS

*ALL FRAMING OPTIONS AVAILABLE WITH 45" O.C. OR 80" O.C. MAXIMUM PURLIN SPACING.

*ALL OPTIONS AVAILABLE WITH MAXIMUM COLUMN SPACING OF 18'–0", 20'–0" & 27'–0".

*ALL 18'–0" AND 20'–0" COLUMN SPACING OPTIONS IN ALL WIDTHS ARE AVAILABLE IN A 20 psf SNOW LOAD OPTION.

*ALL OPTIONS INCLUDE OPTIONS FOR DRILLED PIERS AND SPREAD FOOTINGS.

- ~~20'–0" WIDE, 7.49° SLOPE~~
- ~~21'–3" WIDE, 7.49° SLOPE~~
- ~~24'–9" WIDE, 7.49° SLOPE~~
- ~~36'–6" WIDE, 7.49° SLOPE~~
- ~~38'–6" WIDE, 7.49° SLOPE~~
- ~~42'–6" WIDE, 7.49° SLOPE~~
- ~~18'–6" WIDE, 10° SLOPE~~
- ~~21'–1" WIDE, 10° SLOPE~~
- ~~24'–6½" WIDE, 10° SLOPE~~
- ~~36'–0" WIDE, 10° SLOPE~~
- ~~38'–4½" WIDE, 10° SLOPE~~
- ~~41'–10" WIDE, 10° SLOPE~~

STRUCTURAL DATA

LATERAL RESISTING SYSTEM.....CANTILEVERED COLUMN
FOUNDATION.....PIER AND SPREAD FOOTING
MINIMUM REQUIRED SEISMIC SEPARATION.....8"
TESTING AND INSPECTION LIST.....SEE SHEETS S–3 & S–4
DESIGNED TO SUPPORT FIRE SPRINKLERS?.....CONDITIONAL
YES.....IF WEIGHT OF SPRINKLER SYSTEM COMBINED WITH SOLAR SYSTEM IS LESS THAN 3.15 psf
NO.....IF WEIGHT OF SPRINKLER SYSTEM COMBINED WITH SOLAR SYSTEM IS MORE THAN 3.15 psf

CODES

TITLE 24 CODES:
2013 CALIFORNIA ADMINISTRATIVE CODE (CAC) .....(PART 1, TITLE 24, CCR)
2013 CALIFORNIA BUILDING CODE (CBC), VOLUMES 1 AND 2.....(PART 2, TITLE 24, CCR)
(2012 INTERNATIONAL BUILDING CODE WITH 2013 CALIFORNIA AMENDMENTS)
2013 CALIFORNIA ELECTRICAL CODE .....(PART 3, TITLE 24, CCR)
(2011 NATIONAL ELECTRICAL CODE WITH 2013 CALIFORNIA AMENDMENTS)
2013 CALIFORNIA MECHANICAL CODE (CMC) .....(PART 4, TITLE 24, CCR)
(2012 UNIFORM MECHANICAL CODE WITH 2013 CALIFORNIA AMENDMENTS)
2013 CALIFORNIA PLUMBING CODE (CPC) .....(PART 5, TITLE 24, CCR)
(2012 UNIFORM PLUMBING CODE WITH 2013 CALIFORNIA AMENDMENTS)
2013 CALIFORNIA ENERGY CODE .....(PART 6, TITLE 24, CCR)
(2013 EDITION CALIFORNIA ENERGY COMMISSION BUILDING ENERGY EFFICIENCY STANDARDS)
2013 CALIFORNIA FIRE CODE (CFC) .....(PART 9, TITLE 24, CCR)
(2012 INTERNATIONAL FIRE CODE WITH 2013 CALIFORNIA AMENDMENTS)
2013 CALIFORNIA GREEN BUILDING STANDARDS CODE .....(PART 11, TITLE 24, CCR)
2013 CALIFORNIA REFERENCED STANDARDS CODE .....(PART 12, TITLE 24, CCR)

NFPA 13 – 2013
NFPA 72 – 2013

REFERENCE CODE SECTIONS FOR APPLICABLE STANDARDS:
2013 CBC, CHAPTER 35
2013 CFC, CHAPTER 47

DESIGN PARAMETERS

RISK CATEGORY	II
ROOF LIVE LOAD (Lr):	
WITH SOLAR PANELS INSTALLED:	0 psf (PER IR 16–8)
OPEN TRELLIS SYSTEM:	10 psf (PER IR 16–8)
POINT LOAD:	300 lb (PER IR 16–8)
MAX SNOW LOAD (GROUND) (S):	0 psf, 20 psf (SEE OPTIONS)
MAX DEAD LOAD:	
SOLAR PANEL/RACKING/ELEC	3.15 psf
PURLIN:	1.59 psf
ROOF DEAD LOAD TO BEAM (D):	4.74 psf MAX
WIND: DIRECTIONAL PROCEDURE	
BASIC WIND SPEED	110[1] mph (3 SECOND GUST)
WIND EXPOSURE:	C[1]
INTERNAL PRESSURE:	N/A (OPEN STRUCTURE)
	Kd=0.85
	Kz=0.88
	Kzt=1.00
SEISMIC:	
SEISMIC IMPORTANCE FACTOR:	1.0
CRITERIA #1	
SHORT SPECTRAL RESPONSE:	S_s=1.700[2]
LONG SPECTRAL RESPONSE:	S_1=1.390[2]
SITE CLASS:	D
SHORT SPECTRAL RESPONSE:	S_{DS}=1.133[2]
LONG SPECTRAL RESPONSE:	S_{D1}=1.390[2]
RESPONSE MODIFICATION FACTOR:	R=1.25
SEISMIC RESPONSE COEFFICIENT:	C_S=0.907[2]
DESIGN BASE SHEAR:	
T–STRUCTURES:	8,257.9[2] lb MAX (VARIES DUE TO OPTIONS)
OFFSET T–STRUCTURES:	4,761.0[2] lb MAX (VARIES DUE TO OPTIONS)
CRITERIA #2	
SHORT SPECTRAL RESPONSE:	S_s=3.20[2]
LONG SPECTRAL RESPONSE:	S_1=1.390[2]
SITE CLASS:	D
SHORT SPECTRAL RESPONSE:	S_{DS}=2.133[2]
LONG SPECTRAL RESPONSE:	S_{D1}=1.390[2]
RESPONSE MODIFICATION FACTOR:	R=2.5
SEISMIC RESPONSE COEFFICIENT:	C_S=0.853[2]
DESIGN BASE SHEAR:	
T–STRUCTURES:	7,663.2[2] lb MAX (VARIES DUE TO OPTIONS)
OFFSET T–STRUCTURES:	4,888.3[2] lb MAX (VARIES DUE TO OPTIONS)
CRITERIA #3	
SHORT SPECTRAL RESPONSE:	S_s=3.20[2]
LONG SPECTRAL RESPONSE:	S_1=1.390[2]
SITE CLASS:	D
SHORT SPECTRAL RESPONSE:	S_{DS}=2.133[2]
LONG SPECTRAL RESPONSE:	S_{D1}=1.390[2]
RESPONSE MODIFICATION FACTOR:	R=1.25
SEISMIC RESPONSE COEFFICIENT:	C_S=1.707[2]
DESIGN BASE SHEAR:	
T–STRUCTURES:	15,544.3[2] lb MAX (VARIES DUE TO OPTIONS)
OFFSET T–STRUCTURES:	9,994.5[2] lb MAX (VARIES DUE TO OPTIONS)
SEISMIC DESIGN CATEGORY:	E
SEISMIC FORCE RESISTING SYSTEM:	CANTILEVERED COLUMN
ANALYSIS PROCEDURE:	EQUIVALENT LATERAL FORCE
CRITERIA #4	
SHORT SPECTRAL RESPONSE:	S_s=1.0[2]
LONG SPECTRAL RESPONSE:	S_1=1.390[2]
SITE CLASS:	D
SHORT SPECTRAL RESPONSE:	S_{DS}=0.733[2]
LONG SPECTRAL RESPONSE:	S_{D1}=1.390[2]
RESPONSE MODIFICATION FACTOR:	R=1.25
SEISMIC RESPONSE COEFFICIENT:	C_S=0.587[2]
DESIGN BASE SHEAR:	
T–STRUCTURES:	6,159.6[2] lb MAX

3

NOTES:

[1] THIS PC'S WIND FORCE RESISTING SYSTEM IS DESIGNED TO q_h = 23.24 psf, WHICH CORRESPONDS TO 110 mph EXPOSURE C WITH THE ABOVE USED Kz Kd AND Kzt. THIS PC MAY BE USED IN ANY WIND ZONE WITH $q_h \leq 23.24$ psf. FOR EXAMPLE: THIS PC MAY BE USED AT A SITE WITH 133 mph WIND EXPOSURE B WITH Kd = 0.85, Kz = 0.60 AND Kzt = 1.00 RESULTS IN q_h = 23.20 psf.

[2] THIS PC'S SEISMIC FORCE RESISTING SYSTEM IS GOVERNED BY Cs = 0.907, Cs = 0.853, OR Cs = 1.707, DEPENDING ON THE DESIGN CRITERIA AS GIVEN ABOVE (FOR EXAMPLE: R = 1.25, Ss = 1.7 OR R=2.5, Ss = 3.2). THIS PC MAY BE USED AT ANY SITE SUCH THAT THE SITE SPECIFIC VALUE OF Cs IS LESS THAN THE Cs VALUE OF THE DESIRED CRITERIA SET (E.G. CRITERIA #2) WHILE USING EITHER R = 1.25 OR R = 2.5 WITH SITE SPECIFIC SEISMIC PARAMETERS. FOR EXAMPLE: Ss = 3.3, S_1 = 1.4, R = 2.5 WITH SITE CLASS A WILL HAVE Cs = 0.704 < 0.853 THEREFORE CRITERIA #2 OF THE PC MAY BE USED AT THIS SITE.

OPTIONS SHEET INDEX

THE FOLLOWING CHART LISTS THE DRAWING SHEETS REQUIRED FOR EACH MAJOR OPTION. WHEN ONE OR MORE OF THE OPTIONS ARE CHOSEN THE LISTED REFERENCE SHEETS MUST BE INCLUDED IN THE SITE SPECIFIC DRAWING SET.

OPTIONS	SHEET
ALWAYS REQUIRED	S–1 THROUGH S–5; S–32 THOUGH S–37
T–STRUCTURE, R=1.25 Ss ≤ 1.7	S–6 THROUGH S–12
~~T–STRUCTURE, R=2.5 Ss ≤ 3.2~~	~~S–6, S–13 THROUGH S–18~~
~~T–STRUCTURE, R=1.25 Ss ≤ 3.2~~	~~S–6, S–18.1 THROUGH S–18.6~~
OFFSET T–STRUCTURE, R=1.25 Ss ≤ 1.7	S–19 THROUGH S–25
~~OFFSET T–STRUCTURE, R=2.5 Ss ≤ 3.2~~	~~S–19, S–26 THROUGH S–31~~
~~OFFSET T–STRUCTURE, R=1.25 Ss ≤ 3.2~~	~~S–19, S–31.1 THROUGH S–31.6~~
EQUIPMENT PAD	S–38
BRACED UNISTRUT EQUIPMENT RACK	S–39
~~TUBE STEEL EQUIPMENT RACK~~	~~S–40~~
~~UNISTRUT EQUIPMENT RACK~~	~~S–41~~
EQUIPMENT PAD ENCLOSURE	S–42 & S–43
PERIMETER FENCE	S–44
~~STANDARD ACCESSIBILITY DETAILS~~	~~S–45~~

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
2. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY ADDENDA OR CONSTRUCTION CHANGE DOCUMENTS APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4–338, PART 1, TITLE 24, CCR.
3. A 'DSA CERTIFIED' PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4–342, CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE (PART 1, TITLE 24, CCR).
4. A 'DSA CERTIFIED' INSPECTOR WITH CLASS 2 CERTIFICATION IS REQUIRED FOR THIS PROJECT.
5. A 'DSA CERTIFIED' INSPECTOR WHO IS SPECIFICALLY QUALIFIED IN MECHANICAL AND ELECTRICAL WORK WILL BE REQUIRED FOR THIS PROJECT.
6. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE SCHOOL BOARD SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
7. FOOD HANDLING FACILITIES SHALL COMPLY WITH ALL LOCAL HEALTH REQUIREMENTS AND CALIFORNIA UNIFORM RETAIL FOOD FACILITIES LAWS.
8. SWIMMING POOL SHALL COMPLY WITH ALL LOCAL HEALTH DEPARTMENT REQUIREMENTS.
9. DRINKING WATER WELL SHALL COMPLY WITH ALL LOCAL HEALTH DEPARTMENT REQUIREMENTS.
10. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
11. IF THE PROJECT IS DIVIDED INTO INCREMENTS: THE SCOPE OF WORK FOR EACH INCREMENT MUST BE CLEARLY SPECIFIED ON THE TITLE SHEET OF ALL INCREMENTS SUBMITTED.

FIRE LIFE SAFETY

AUTOMATIC FIRE SPRINKLERS REQUIRED? (Y/N).....N

BUILDING DATA

TYPE OF CONSTRUCTION.....IIB
OCCUPANCY.....S–2
NOTE: OCCUPANCIES OTHER THAN S–2 (OPEN PARKING AREAS) MAY BE UTILIZED AS LONG AS THEY CONFORM TO THE FOLLOWING:
1) THE RISK CATEGORY OF THE STRUCTURE REMAINS RISK II PER THE 2013 CBC TABLE 1604A.5.
2) THE OCCUPANCY IS DETERMINED TO MEET WITH THE 2013 CBC CHAPTER 3 AND ITS REQUIREMENTS.
3) THE ALLOWABLE HEIGHT AND BUILDING AREA IS LIMITED TO THE REQUIREMENTS IN THE 2013 CBC TABLE 503, AND THE REQUIREMENTS OF THE 2013 CBC TABLE 1604A.5 TO REMAIN A CATEGORY II STRUCTURE.
NUMBER OF STORIES.....1
BUILDING AREAS.....UNLIMITED (PER 2013 CBC SECTIONS 406.5.4 AND 406.5.5)
MODULE SIZES.....VARY WITH OPTIONS
BUILDING LENGTH:
18'–6" TO 42'–6" WIDTH.....MAX 500'–0" LENGTH
NOTE: NO SEISMIC AND/OR THERMAL EXPANSION JOINTS REQUIRED ALONG THE LENGTH OF THE STRUCTURES. (ALL JOINTS ARE INTERNAL)

PRE-CHECK (PC) DOCUMENT

CODE: 2013 CBC

A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER
DUSTIN K. ROSEVAR
S 5885
EXP. 06-30-2016
STATE OF CALIFORNIA

DATE SIGNED
December 23, 2015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
A 03 119217
AC FLS SS
DATE JUL 3 1 2018

SITE SPECIFIC DSA APPROVAL

~~IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP. P. C. 04-114125
Revision 3
AC PR
DATE 6/2/2018
PC – CHECK (PC) DOCUMENT
CODE: 2013 CBC
A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED~~

MBARC CONSTRUCTION INC.
LIC # 867960
B AND C51
674 RANCHEROS DR
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PHONE: (949) 388-9333
FAX: (949) 388-3773

PHOTOVOLTAIC STRUCTURES
COVER SHEET 2

DRAWN MAP
CHECKED DKR
DATE ~~6/18/2018~~ 3
4STEL JOB NO. 13-1010
SHEET S-2
2 OF 46 SHEETS

SOILS NOTES:

1. IF NO GEOTECHNICAL REPORT IS SUPPLIED AT THE TIME OF DSA REVIEW ADDRESSING SITE-SPECIFIC PARAMETERS, FOUNDATION SELECTIONS SHALL BE BASED ON CLASS W SOILS (SOIL CLASS 5 OF CBC TABLE 1806A.2 WITH DOUBLING OF LATERAL BEARING PRESSURE FOR STRUCTURES NOT ADVERSELY AFFECTED BY ½" MOTION AT GROUND SURFACE) IN THE SOIL CLASS TABLE BELOW.
2. WHEN A GEOTECHNICAL REPORT IS SUPPLIED, THE GEOTECHNICAL ENGINEER SHALL REVIEW THE SITE CONDITIONS AND SUPPLY THE FINAL SOILS CLASS TO BE USED FROM THE BELOW TABLE. IN MAKING A SELECTION OF THE APPROPRIATE SOILS CLASS, THE GEOTECHNICAL ENGINEER SHOULD TAKE INTO CONSIDERATION: ANY AND ALL ALLOWED INCREASES, BASIS OF DEPTH CALCULATION, ACTUAL LOADING CONDITIONS, AND SITE CONDITIONS. THESE CONSIDERATIONS INCLUDE BUT ARE NOT LIMITED TO:
   - A. ALLOWABLE LATERAL BEARING PRESSURE MAY BE DOUBLED DUE TO THE STRUCTURES NOT BEING ADVERSELY AFFECTED BY ½" MOTION AT THE GROUND SURFACE DUE TO SHORT-TERM LATERAL LOADS PER 2013 CBC 1806A.3.4.
   - B. ALLOWABLE LATERAL BEARING PRESSURE MAY BE CONSIDERED TO ACT OVER AN AREA EQUAL TO TWO TIMES THE PIER DIAMETER DUE TO LARGE PIER SPACING. IF THIS IS ALLOWED, THE ALLOWABLE LATERAL BEARING PRESSURE MAY BE DOUBLED, ACTING OVER THE ACTUAL PIER DIAMETER.
   - C. THE GEOTECHNICAL REPORT SHALL SPECIFY WHETHER THE INCREASES TO ALLOWABLE LATERAL BEARING PRESSURE FOR ½" MOTION AT GROUND SURFACE AND FOR INCREASED PIER SPACING MAY BE APPLIED AT THE SAME TIME.
   - D. THE SOILS CLASSES IN THE CHART BELOW REFLECT THE BASE VALUES USED IN THE CALCULATIONS TO DETERMINE THE REQUIRED FOUNDATION DEPTHS.
   - E. THE FOUNDATION DEPTHS SHOWN ON SHEETS S-8, S-10, S-14, S-16, S-18.2, S-18.4, S-21, S-23, S-27, S-29, S-31.2 AND S-31.4, REFLECT THE GOVERNING DEPTH REQUIREMENT DUE TO EITHER LATERAL LOAD OR VERTICAL LOAD.
   - F. FOR LATERAL LOADING, THE FOUNDATION DEPTHS SHOWN ON SHEETS S-8, S-10, S-14, S-16, S-18.2, S-18.4, S-21, S-23, S-27, S-29, S-31.2 AND S-31.4, UTILIZE THE LATERAL BEARING PRESSURES FROM THE BELOW SOIL CLASS CHART, WHICH HAVE BEEN INCREASED BY 33% FOR SHORT DURATION LOADS USING ALTERNATIVE ASD LOAD COMBINATIONS PER 2013 CBC 1806A.1.
   - G. FOR VERTICAL LOADING, THE FOUNDATION DEPTHS SHOWN ON SHEETS S-8, S-14, S-18.2, S-18.4, S-21, S-27, S-31.2 AND S-31.4 ARE DESIGNED BASED ON EITHER END BEARING OR SKIN FRICTION, WHERE SKIN FRICTION HAS BEEN BASED ON 2013 CBC 1810A.3.3.1.4 (I.E. SKIN FRICTION BASED ON 1/6 THE VALUE OF END BEARING, AND END BEARING AND SKIN FRICTION NOT BEING COMBINED).
   - H. THE GOVERNING LOAD COMBINATIONS FOR FOUNDATION DESIGN ARE SHOWN ON SHEETS S-7, S-13, S- 18.1, S-20, S-26 AND S-31.1. IF THE GEOTECHNICAL REPORT USES LOADS FROM THE CHART, A CCD SHALL BE PROCESSED THROUGH DSA TO USE ALTERNATIVE FOUNDATION DEPTHS GIVEN IN THE GEOTECHNICAL REPORT.
   - I. FOR SITES WITH HIGH GROUND WATER AND/OR POTENTIAL CAVING ISSUES DURING EXCAVATION, THE GEOTECHNICAL REPORT SHALL INCLUDE ALTERNATIVE SKIN FRICTION OR VERTICAL BEARING VALUES FOR PIERS UTILIZING STEEL CASING.
3. THE GEOTECHNICAL ENGINEER MAY SPECIFY DIFFERENT SOILS CLASSES TO BE USED FOR THE DIFFERENT STRUCTURE TYPES (T OR OT), DIFFERENT AREAS OF THE SITE (I.E. NORTH LOT OR WEST LOT), OR THE ENGINEER MAY SPECIFY ONE SOILS CLASS TO BE USED FOR THE ENTIRE SITE.
4. THE GEOTECHNICAL ENGINEER SHALL ADDRESS IN THE REPORT ANY CONCRETE DURABILITY REQUIREMENTS IN ACCORDANCE WITH ACI 318-11 CHAPTER 4.
5. THE GEOTECHNICAL REPORT SHALL BE SPECIFIC TO THE LOCATION OF THE PHOTOVOLTAIC STRUCTURES. BORING(S) SHALL BE DONE AT THE SPECIFIC LOCATION(S) WHERE THE PHOTOVOLTAIC STRUCTURES ARE TO OCCUR. THE GEOTECHNICAL REPORT SHALL CONFORM TO 2013 CBC SECTION 1803A.
6. A COPY OF THE GEOTECHNICAL REPORT SHALL BE PROVIDED AT THE TIME OF PLAN REVIEW.
7. AT THE TIME OF PLAN REVIEW, THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE SHALL SELECT A SOILS CLASS ON THE SITE-SPECIFIC PLANS BASED ON THE GEOTECHNICAL REPORT (OR NOTE 1 ABOVE).

ALLOWABLE VERTICAL AND LATERAL BEARING

SOILS CLASS	ALLOWABLE VERTICAL BEARING PERSSURE (psf)	ALLOWABLE LATERAL BEARING (psf/ft BELOW NATURAL GRADE)
CLASS V	1500	~~100~~
CLASS W	~~1500~~	200
CLASS X	~~2000~~	300
CLASS Y	2000	~~400~~
CLASS Z	3000	600

SPECIAL INSPECTION

1. SOILS:
   - VERIFY THE SITE HAS BEEN PREPARED PROPERLY PRIOR TO PLACEMENT OF CONTROLLED FILL AND/OR EXCAVATIONS FOR FOUNDATIONS.
   - VERIFY THAT THE FOUNDATION EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.
   - VERIFY THAT MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.
2. PIER FOUNDATIONS:
   - INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH PIER.
   - VERIFY LOCATIONS OF PIERS.
3. CONCRETE:
   - VERIFY USE OF REQUIRED DESIGN MIX, DETERMINE THE TEMPERATURE OF THE CONCRETE, AND (WHERE REQUIRED) PERFORM AIR CONTENT TEST.
   - TEST CONCRETE (COMPRESSION TEST).
   - INSPECT PLACEMENT OF FORMWORK, REINFORCING STEEL, EMBEDDED ITEMS, AND CONCRETE. INSPECT CURING AND FORM REMOVAL.
   - INSPECT INSTALLATION OF POST-INSTALLED ANCHORS.
   - TEST POST-INSTALLED ANCHORS PER 2013 CBC 1913A.
   - ALL ½" ø HILTI STAINLESS STEEL KB-TZ BOLTS TO BE INSTALLED TO 40 FT-LB OF TORQUE. ALL ⅝" ø HILTI STAINLESS STEEL KB-TZ BOLTS TO BE INSTALLED TO 60 FT-LB OF TORQUE. ALL ¾" ø HILTI STAINLESS STEEL KB-TZ BOLTS TO BE INSTALLED TO 110 FT-LB OF TORQUE. AT LEAST 50% OF THE INSTALLED ANCHORS SHALL BE TESTED.
   - SLUMP TEST SHALL BE PERFORMED PER SITE SPECIFIC DSA-103
4. STEEL:
   - VERIFY THAT ALL MATERIALS ARE APPROPRIATELY MARKED AND THAT:
     - MILL CERTIFICATES INDICATE MATERIAL PROPERTIES THAT COMPLY WITH REQUIREMENTS.
     - MATERIAL SIZES, TYPES AND GRADES COMPLY WITH REQUIREMENTS.
   - TEST UNIDENTIFIED MATERIALS.
   - VERIFY MEMBER LOCATIONS, BRACING AND ALL DETAILS CONSTRUCTED IN THE FIELD.
   - VERIFY STIFFENER LOCATIONS, CONNECTION TAB LOCATIONS, AND ALL CONSTRUCTION DETAILS FABRICATED IN THE SHOP.
   - VERIFY WELD FILLER MATERIAL IDENTIFICATION MARKINGS PER AWS DESIGNATION LISTED ON THE DSA APPROVED DOCUMENTS AND THE WPS.
   - VERIFY WELD FILLER MATERIAL MANUFACTURER'S CERTIFICATE OF COMPLIANCE.
   - VERIFY WPS, WELDER QUALIFICATIONS, AND EQUIPMENT.
   - INSPECT GROOVE, MULTI-PASS, AND FILLET WELDS > $\frac{5}{16}$" (BOTH SHOP AND FIELD WELDS).
5. SHOP FABRICATION:
   - VERIFY FABRICATOR'S FABRICATION AND QUALITY CONTROL PROCEDURES.
   - VERIFY ALL ASPECTS OF SHOP FABRICATION INCLUDING MEMBER LOCATIONS, DIMENSIONAL LAYOUT OF ALL PARTS AND PIECES, ALL WELDING, BOLTING, ETC.
6. SEE DSA APPROVED 103 FOR ADDITIONAL REQUIREMENTS.

GENERAL NOTES:

1. DESIGN PER 2013 C.B.C. AND ITS PRESCRIBED LOADING AND MATERIAL SPECIFICATIONS:
   - ASCE 7-10
   - 14TH EDITION AISC STEEL MANUAL
   - 2007 AISI COLD FORMED STEEL STANDARD
   - ACI 318-11
2. THESE STRUCTURES ARE NOT DESIGNED TO BE, NOR SHALL THEY BE, ENCLOSED.
3. ALL DIMENSIONS, CONDITIONS, AND ELEVATIONS ARE TO BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCING WORK OR FABRICATION. IF ANY DISCREPANCIES ARE FOUND OR IF ANY CONDITION EXISTS NOT AS SHOWN ON THE DRAWINGS THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE SHALL BE NOTIFIED IMMEDIATELY.
4. IF THE SNOW LOAD OPTION IS USED THEN THE SITE-SPECIFIC MAX GROUND SNOW LOADING INCLUDING DRIFT MUST BE LESS THAN OR EQUAL TO 20 PSF.
5. NO FUTURE STRUCTURAL ROOF DECK OR SHEATHING MAY BE APPLIED TO THE OPEN GRID.
6. THE ALLOWABLE MAXIMUM PSF ALLOWED FOR THE SOLAR PANEL, ELECTRICAL, AND OTHER NON-STRUCTURAL ITEMS IS 3.15 PSF.
7. ALL SCREWS OTHER THAN THE SOLAR PANEL CLIP SCREW TO BE ITW BUILDEX TEK SCREWS PER ICC ESR-1976 OR ELCO DRIL SCREW PER ICC-ESR# 3294.
8. SOLAR PANEL ATTACHMENT CLIPS AND SOLAR FIT SYSTEM DO NOT HAVE SPECIAL INSPECTIONS REQUIREMENTS NOR DO THEY REQUIRE INSPECTION OR VERIFICATION BY THE TESTING INSPECTION LAB OR IOR.

iFORCE CLIP AND SCREW NOTES:

NOTES BELOW PERTAIN TO THE iFORCE SOLAR CLIP INSTALLATION. SOLAR PANEL CLIPS, WHEN USED, THE PROJECT INSPECTOR SHALL INSPECT THE INSTALLATION OF THE CLIP (NOT THE PHYSICAL CLIP).

1. SCREWS USED TO ATTACH THE SOLAR PANELS (I.E. SOLAR PANEL CLIP SCREW) – THE ONLY APPROVED SCREWS THAT WILL BE ACCEPTED FOR SOLAR PANEL CLIP IS THE ITW BUILDEX TEKS SELECT #12 SCREW PER CITY OF LOS ANGELES RR 25915 AND PER ICC ESR 3223 OR DRIL-FLEX SCREW PER ICC-ESR# 3332. NO SUBSTITUTES WILL BE ACCEPTED.
2. TO ENSURE ALL REQUIREMENTS OF ICC-ESR-3223 OR ICC-ESR# 3332 AND SPECIFICATIONS ON THESE PLANS HAVE BEEN MET, FORMAL SUBMITTALS ARE REQUIRED TO BE APPROVED BY THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE FOR:
   - THE SOLAR PANEL CLIP
   - SOLAR PANEL CLIP SCREW
   - THE SCREW GUN USED TO INSTALL THE SOLAR PANEL CLIP
3. SOLAR PANEL CLIP TO HAVE A SHOP DRAWING SUBMITTED FOR SIZE. THE MINIMUM GRIP HEIGHT IS $\frac{1}{8}$" LESS THAN THE SOLAR PANEL HEIGHT; THE MAXIMUM GRIP HEIGHT IS $\frac{1}{16}$" LESS THAN THE SOLAR PANEL HEIGHT.
4. SOLAR PANEL CLIP INSTALLATION LOCATION ON PANEL TO BE VERIFIED WITH MANUFACTURER FOR WARRANTY CONFORMANCE.
5. FORMAL SUBMITTALS ARE REQUIRED TO BE APPROVED BY THE DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE FOR:
   - A WRITTEN DESCRIPTION DETAILING THE PROPOSED SOLAR PANEL INSTALLATION PROCEDURE
   - SOLAR PANEL CLIP
   - SCREW INSTALLATION PROCEDURE
6. THE IOR NEEDS TO BE PRESENT AT THE START OF INSTALLATION OF THE SOLAR PANEL CLIP SCREWS TO PROPERLY DETERMINE THE PROPER CLUTCH SETTING ON THE SCREW GUNS IS BEING UTILIZED, AND CONFORMANCE TO ICC ESR-3223 OR ICC-ESR# 3332. IT IS RECOMMENDED, BUT NOT REQUIRED, THAT SOME SAMPLE PURLIN MATERIAL BE USED TO DO SOME TEST INSTALLS ON THE GROUND PRIOR TO THE IN AIR INSTALLATION. THIS WILL MAKE DETERMINING THE CORRECT CLUTCH SETTING EASIER.
7. THE IOR IS REQUIRED TO PERIODICALLY INSPECT THE INSTALLATION OF THE SOLAR PANEL CLIPS TO ENSURE THE INSTALLATION MEETS WITH THE WRITTEN DESCRIPTION OF INSTALLATION AS APPROVED THROUGH THE SUBMITTAL PROCESS AND TO VERIFY THE PROPER SCREW GUN SETTINGS ARE BEING UTILIZED.
8. THE IOR NEEDS TO PERFORM AN END OF PROJECT INSPECTION OF EACH CANOPY FROM A LIFT TO VERIFY ALL CLIPS HAVE BEEN INSTALLED AND THAT THERE ARE NO MISSING CLIPS.

STEEL NOTES

1. COLD FORMED STEEL SIZES ARE BASED ON GAUGE THICKNESS.
2. PURLINS, BEAMS, POSTS (FRAMING MEMBERS) HAVE MIN. YIELD STRENGTHS AS INDICATED.
3. ZINC COATED CONFORMANCE WITH G60 STANDARD OR BETTER. COLD FORM MEMBERS TO BE GALVANIZED IN ACCORDANCE WITH ASTM A653. TUBE STEEL MEMBERS AND PLATES IN ACCORDANCE WITH AST A123.
4. FASTENERS SHALL BE GALVANIZED, CADMIUM PLATED, OR ZINC COATED.
5. ALL STEEL FABRICATION SHALL COMPLY WITH LATEST AISC SPECIFICATIONS.
6. ALL WELDING SHALL COMPLY WITH THE LATEST AWS D1.1. ALL WELD FILLER MATERIAL SHALL HAVE A MINIMUM CHARPY V-NOTCH (CVN) VALUE OF 20 FT-LBS AT A TEMPERATURE OF -20DEG F
7. ALL BOLTS TO MEET OR EXCEED ASTM A307. NO BOLTING INSPECTIONS REQUIRED.
8. ALL PLATES AND ANGLES TO BE ASTM A36 U.N.O.
9. ALL STRUCTURAL TUBING TO BE ASTM A1085 U.N.O.
10. ALL PURLINS TO BE ASTM A653 GR. 55
11. REPAIR ANY DAMAGED GALVANIZATION AFTER FIELD WELDS WITH AN APPROVED REPAIR METHOD.
12. ALL MEMBERS TO BE GALVANIZED OR PRIMED AND PAINTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ALL CONTRACT DOCUMENTS SHALL SPECIFY THE TYPE OF SSPC CORROSION RESISTING SYSTEM TO BE UTILIZED AND THE SSPC GRADE FOR CLEANING, MINIMUM SSPC GRADE SP2
13. ALL BEAM TO COLUMN CONNECTIONS TO MEET WITH DETAILS 3 OR 4/S-12, 3 OR 4/S-18, 3 OR 4/S-18.6, 3 OR 4/S-25, 3 OR 4/S-31, 3 OR 4/S-31.6 FOR CORROSION PROTECTION
14. ALL A307 BOLTS MAY BE SUBSTITUTED WITH THE SAME QUANTITY OF SAE J429 GRADE 2 BOLTS OF THE SAME DIAMETER.
15. A1085 STEEL HAS SAME OR BETTER PROPERTIES AND WELDABILITY THAN A500 GR. B
16. BOLT HOLES FOR 1/2" DIAMETER BOLTS SHALL BE AS FOLLOWS: 9/16" DIAMETER FOR STANDARD HOLES; 9/16" X 11/16" FOR SHORT SLOTTED HOLES.

CONCRETE NOTES:

1. CONCRETE MIN. 3000 psi AT 28 DAYS. (NOTE: DESIGN BASED ON 3000 psi) IF 3500 psi OR GREATER IS UTILIZED, CONTINUOUS BATCH PLANT INSPECTION MAY BE WAIVED PER 2013 CBC 1705A.3.3 AND PERIODIC INSPECTION SHALL COMPLY WITH NOTE 10.
2. CONCRETE TO REACH 1000 psi PRIOR TO REMOVAL OF SHORING AND/OR INSTALLATION OF BEAMS AND PURLINS. (NOTE: A HIGHER COMPRESSIVE CONCRETE MAY BE USED TO ACHIEVE 1000 psi SOONER. SUBMIT AN APPROVED CONCRETE MIX DESIGN TO JUSTIFY)
3. CONCRETE TO REACH 3000 psi PRIOR TO INSTALLATION OF SOLAR PANELS. (NOTE: A HIGHER COMPRESSIVE CONCRETE MAY BE USED TO ACHIEVE 3000 psi SOONER. SUBMIT AN APPROVED CONCRETE MIX DESIGN TO JUSTIFY)
4. REINFORCEMENT BARS SHALL BE ASTM A615, GR60. MINIMUM U.N.O.
5. MINIMUM CONCRETE COVER SHALL BE 2½" TO EARTH (DRILLED PIER FOUNDATIONS ONLY), 3" TO EARTH ALL OTHER CONCRETE, 2" TO SKY. PER CBC TABLE 1808A.8.2
6. ALL REINFORCING STEEL AND OTHER EMBEDDED ITEMS SHALL BE SECURELY POSITIONED PRIOR TO THE POURING OF CONCRETE.
7. ALL CONCRETE WORK SHALL COMPLY WITH ACI 301 & 318 LATEST EDITION.
8. AGGREGATE GRADATION AND QUALITY SHALL BE IN ACCORDANCE WITH ACI 302-IR.
9. COLD JOINTS SHALL HAVE A ROUGHENED SURFACE. BONDING AGENT SHALL COMPLY WITH ASTM C1059. A SUBMITTAL FOR CONCRETE BONDING AGENT SHALL BE APPROVED BY DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO INSTALLATION. DSA INSPECTOR OF RECORD TO PERIODICALLY INSPECT INSTALLATION OF BONDING AGENT.
10. WHEN CONTINUOUS BATCH PLANT INSPECTION IS WAIVED, THE FOLLOWING PERIODIC INSPECTION REQUIREMENTS SHALL APPLY:
    - QUALIFIED TECHNICIAN OF THE TESTING LABORATORY SHALL CHECK THE FIRST BATCH AT THE START OF THE DAY.
    - LICENSED WEIGHMASTER TO POSITIVELY IDENTIFY MATERIALS AS TO QUANTITY AND CERTIFY TO EACH LOAD BY A BATCH TICKET.
    - BATCH TICKETS, INCLUDING MATERIAL QUANTITIES AND WEIGHTS SHALL ACCOMPANY THE LOAD, SHALL BE TRANSMITTED TO THE INSPECTOR OF RECORD BY A TRUCK DRIVER WITH LOAD IDENTIFIED THEREON. THE LOAD SHALL NOT BE PLACED WITHOUT A BATCH TICKET IDENTIFYING THE MIX. THE INSPECTOR WILL KEEP A DAILY RECORD OF PLACEMENTS, IDENTIFYING EACH TRUCK, ITS LOAD, AND TIME OF RECEIPT, AND APPROXIMATE LOCATION OF DEPOSIT IN THE STRUCTURE AND WILL TRANSMIT A COPY OF THE DAILY RECORD TO THE ENFORCEMENT AGENCY.
11. CONCRETE MAY BE PUMPED, POURED, TREMIED, TAILGATED, FUNNELED OR OTHER SUCH METHODS INTO PLACE. CONCRETE SHALL BE ALLOWED TO FREE FALL THE ENTIRE DEPTH OF THE FOUNDATION. PLACEMENT OF ANY FREE-FALL CONCRETE SHALL BE SUCH THAT THE CONCRETE DOES NOT ALTER THE EMBEDMENT DEPTH OR THE CLEARANCE OF THE REINFORCING BAR CAGE OR OTHER EMBEDDED MATERIALS.

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DERRAN K. ROSSEAU S 5885 EXP. 06-30-2016 CIVIL STRUCTURAL

7/22/15

DATE SIGNED MMMM DD, 2015

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT A 03 119217 AC FLS SS DATE JUL 31 2015

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES APP#: P. C. 04-114125 AC FLS SS DATE JUL 22 2015 PLAN CHECK (PC) DOCUMENT CODE: 2013 CBC SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

MBARC CONSTRUCTION INC.
LIC # 845960 B AND C51
674 RANCHEROS DR SAN MARCOS, CA 92069
PHONE: (760) 744-4133 FAX: (760) 744-4449

4STEL ENGINEERING
STRUCTURAL ENGINEERING
109 EAST ESCALONES SAN CLEMENTE, CA 92672
PHONE: (949) 388-9333 FAX: (949) 388-3773

PHOTOVOLTAIC STRUCTURES GENERAL NOTE SPECIFICATIONS

DRAWN MAP
CHECKED DKR
DATE 5/29/15
4STEL JOB NO. 13-1010
SHEET S-3
3 OF 46 SHEETS

SAMPLE - DSA-103

STRUCTURES WITH ONLY PIER FOOTINGS WITH OUT POST INSTALLED ANCHORS

DSA-103 rev. 12/2013

Statement of Structural Tests & Special Inspections - 2013 CBC

INCREMENT #: | DSA File No.: | Application No.: | Date Submitted: | Revised: | Revised:

School Name | District

IMPORTANT: This form is only a summary list of structural tests and special inspections required for the project. The actual tests and inspections must be performed as detailed on the DSA approved documents. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A.
NOTE: This form is also available for projects submitted for review under the 2007 and 2010 CBC.

INSTRUCTIONS: Click a plus sign (+) before any category or subcategory to reveal additional tests and special inspections. An "X" before a listed test or inspection indicates it is a mandatory requirement. A shaded box indicates a test or special inspection may be required, depending on the scope of the construction and other issues. A shaded box can be clicked indicating your selection of that test. Note: A minus (-) on a category or subcategory heading indicates that it can be collapsed. However, any selections you may have made will be retained. Click on the "COMPILE" button to show only the tests finally selected. For more information on use of this form, see DSA-103.INSTR.

Note: References are to the 2013 edition of the California Building Code (CBC) unless otherwise noted.

REQUIRED	TEST OR SPECIAL INSPECTION	TYPE	FREQUENCY (or per)	CODE REFERENCE AND NOTES
-	**SOILS**			
-	**1. GENERAL:**	Table 1705A.6		
X	a. Verify that: • soil has been prepared properly prior to placement of controlled fill and/or excavations for foundations, • foundation excavations are extended to proper depth and have reached proper material, and • materials below footings are adequate to achieve the design bearing capacity.	Periodic	OE*	* By geotechnical engineer or his or her qualified representative.
-	**4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):**	Table 1705A.7		
X	a. Inspect drilling operations and maintain complete and accurate records for each pier.	Continuous	OE*	* By geotechnical engineer or his or her qualified representative.
X	b. Verify locations of piers.	Continuous	PI	
X	c. Confirm pier diameters, plumbness, bell diameters (if applicable), lengths, and embedment into bedrock (if applicable). Record concrete or grout volumes.	Continuous	OE*	* By geotechnical engineer or his or her qualified representative.
X	d. Confirm adequate end strata bearing capacity.	Test	Lab*	* Under the supervision of the geotechnical engineer.
X	e. Concrete plans.	Provide test and inspection per CONCRETE section below.		
-	**CONCRETE**	Table 1705A.3		
-	**7. CAST IN PLACE CONCRETE**			
	Material Verification and Testing:			
X	a. Verify use of required design mix.	Periodic	SI & F*	* To be performed by batch-plant special inspector and project inspector.
X	b. Test reinforcing steel.	Test	Lab	1913A.2 (1913.2.E), ASTM A370, DSA IR 17-10
X	c. Perform slump, temperature, and (where required) air content tests.	Test	Lab	ASTM C172, ASTM C231.
X	d. Test concrete (compression).	Test	Lab	ACI 318 Section 5.6 and 1905A.1.3 (1913.3.1), ASTM C39.
	Inspection:			
X	a. Batch plant inspection	Continuous	SI	1705A.3.3: If approved by DSA, batch plant inspection may be reduced to periodic if plant complies with 1705A.3.3, Item 1, and requires first batch inspection, weighmaster, and batch tickets.
X	b. Inspect placement of formwork, reinforcing steel, embedded items and concrete. Inspect curing and form removal.	Continuous	PI*	* May be performed by a special inspector when specifically approved by DSA.
-	**11. POST-INSTALLED ANCHORS:**			
X	a. Inspect installation of post-installed anchors.	Continuous	SI	Table 1705A.3 * May be performed by the project inspector when specifically approved by DSA.
X	b. Test post-installed anchors.	Test	Lab	1910A.7 (1913.2.E)
+	**MASONRY**	TMS 402-11/ACI 530-11/ASCE 5-11 Table 1.19.3		
-	**STEEL**	Table 1705A.2.1		
-	**17. STRUCTURAL STEEL AND COLD-FORMED STEEL USED FOR STRUCTURAL PURPOSES**			
	Material Verification:			
X	a. Verify that all materials are appropriately marked and that: • Mill certificates indicate material properties that comply with requirements, • Material sizes, types and grades comply with requirements.	Periodic	-	* By special inspector when preformed off-site; by project inspector for steel shipped directly to project site without welding or fabrication.
X	b. Test unidentified materials.	Test	Lab	2858A.1 (2203.1.), ASTM A370.
X	c. Examine seam welds of structural tubes and pipes.	Periodic	SI*	* DSA IR 17-3.
	Inspection:			
X	d. Verify member locations, fastening and details constructed in the field.	Continuous	PI	
X	e. Verify stiffener locations, connection tab locations and all construction details fabricated in the shop.	Periodic	SI	
-	**19. WELDING:**			DSA IR 17-3, AWS D1.1 and AWS D1.8 (AWS D1.3 for cold formed steel).
	Verification of Materials, Equipment, Welders, etc:			
X	a. Verify weld filler material identification markings per AWS designation listed on the DSA approved documents and the WPS.	Periodic	SI	
X	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	
X	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.
-	**19.1 SHOP WELDING:**			
X	a. Inspect groove, multi-pass, and fillet welds > 5/16"	Continuous	SI	Per AISC 360 (and AISC 341 as applicable), DSA IR 17-3
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
-	**19.2 FIELD WELDING:**			
X	a. Inspect groove, multi-pass, and fillet welds > 5/16"	Continuous	SI	Per AISC 360 (and AISC 341 as applicable), DSA IR 17-3.
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
+	**WOOD**			
+	**OTHER**			
X	**28. IFORCE PANEL CLIP INSTALLATION**	Continuous	IOR	SCREWS AND CLIPS INSTALLED PER APPROVED SUBMITTAL & NOTES ON PLANS

1 Soils testing and inspection: Geotechnical Verified Report - Form DSA-293
2 All Structural Testing: Laboratory Verified Report - Form DSA-291
3 Concrete Batch Plant inspection: Special inspection Verified Report - Form DSA-292
4 Shop Welding Inspection: Special inspection Verified Report - Form DSA-292
5 Field Welding Inspection: Special inspection Verified Report - Form DSA-292

SAMPLE - DSA-103

STRUCTURES WITH ONLY PIER FOOTINGS WITH POST INSTALLED ANCHORS

DSA-103 rev. 12/2013

Statement of Structural Tests & Special Inspections - 2013 CBC

INCREMENT # | DSA File No.: | Application No.: | Date Submitted: | Revised: | Revised:

School Name | District

IMPORTANT: This form is only a summary list of structural tests and special inspections required for the project. The actual tests and inspections must be performed as detailed on the DSA approved documents. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A.
NOTE: This form is also available for projects submitted for review under the 2007 and 2010 CBC.

INSTRUCTIONS: Click a plus sign (+) before any category or subcategory to reveal additional tests and special inspections. An "X" before a listed test or inspection indicates it is a mandatory requirement. A shaded box indicates a test or special inspection may be required, depending on the scope of the construction and other issues. A shaded box can be clicked indicating your selection of that test. Note: A minus (-) on a category or subcategory heading indicates that it can be collapsed. However, any selections you may have made will be retained. Click on the "COMPILE" button to show only the tests finally selected. For more information on use of this form, see DSA-103.INSTR.

Note: References are to the 2013 edition of the California Building Code (CBC) unless otherwise noted.

REQUIRED	TEST OR SPECIAL INSPECTION	TYPE	FREQUENCY (or per)	CODE REFERENCE AND NOTES
-	**SOILS**			
-	**1. GENERAL:**	Table 1705A.6		
X	a. Verify that: • soil has been prepared properly prior to placement of controlled fill and/or excavations for foundations, • foundation excavations are extended to proper depth and have reached proper material, and • materials below footings are adequate to achieve the design bearing capacity.	Periodic	OE*	* By geotechnical engineer or his or her qualified representative.
-	**4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):**	Table 1705A.7		
X	a. Inspect drilling operations and maintain complete and accurate records for each pier.	Continuous	OE*	* By geotechnical engineer or his or her qualified representative.
X	b. Verify locations of piers.	Continuous	PI	
X	c. Confirm pier diameters, plumbness, bell diameters (if applicable), lengths, and embedment into bedrock (if applicable). Record concrete or grout volumes.	Continuous	OE*	* By geotechnical engineer or his or her qualified representative.
X	d. Confirm adequate end strata bearing capacity.	Test	Lab*	* Under the supervision of the geotechnical engineer.
X	e. Concrete plans.	Provide test and inspection per CONCRETE section below.		
-	**CONCRETE**	Table 1705A.3		
-	**7. CAST IN PLACE CONCRETE**			
	Material Verification and Testing:			
X	a. Verify use of required design mix.	Periodic	SI & F*	* To be performed by batch-plant special inspector and project inspector.
X	b. Test reinforcing steel.	Test	Lab	1913A.2 (1913.2.E), ASTM A370, DSA IR 17-10
X	c. Perform slump, temperature, and (where required) air content tests.	Test	Lab	ASTM C172, ASTM C231.
X	d. Test concrete (compression).	Test	Lab	ACI 318 Section 5.6 and 1905A.1.3 (1913.3.1), ASTM C39.
	Inspection:			
X	a. Batch plant inspection	Continuous	SI	1705A.3.3: If approved by DSA, batch plant inspection may be reduced to periodic if plant complies with 1705A.3.3, Item 1, and requires first batch inspection, weighmaster, and batch tickets.
X	b. Inspect placement of formwork, reinforcing steel, embedded items and concrete. Inspect curing and form removal.	Continuous	PI*	* May be performed by a special inspector when specifically approved by DSA.
-	**11. POST-INSTALLED ANCHORS:**			
X	a. Inspect installation of post-installed anchors.	Continuous	SI	Table 1705A.3 * May be performed by the project inspector when specifically approved by DSA.
X	b. Test post-installed anchors.	Test	Lab	1910A.7 (1913.2.E)
+	**MASONRY**	TMS 402-11/ACI 530-11/ASCE 5-11 Table 1.19.3		
-	**STEEL**	Table 1705A.2.1		
-	**17. STRUCTURAL STEEL AND COLD-FORMED STEEL USED FOR STRUCTURAL PURPOSES**			
	Material Verification:			
X	a. Verify that all materials are appropriately marked and that: • Mill certificates indicate material properties that comply with requirements, • Material sizes, types and grades comply with requirements.	Periodic	-	* By special inspector when preformed off-site; by project inspector for steel shipped directly to project site without welding or fabrication.
X	b. Test unidentified materials.	Test	Lab	2858A.1 (2203.1.), ASTM A370.
X	c. Examine seam welds of structural tubes and pipes.	Periodic	SI*	* DSA IR 17-3.
	Inspection:			
X	d. Verify member locations, fastening and details constructed in the field.	Continuous	PI	
X	e. Verify stiffener locations, connection tab locations and all construction details fabricated in the shop.	Periodic	SI	
-	**19. WELDING:**			DSA IR 17-3, AWS D1.1 and AWS D1.8 (AWS D1.3 for cold formed steel).
	Verification of Materials, Equipment, Welders, etc:			
X	a. Verify weld filler material identification markings per AWS designation listed on the DSA approved documents and the WPS.	Periodic	SI	
X	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	
X	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.
-	**19.1 SHOP WELDING:**			
X	a. Inspect groove, multi-pass, and fillet welds > 5/16"	Continuous	SI	Per AISC 360 (and AISC 341 as applicable), DSA IR 17-3
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
-	**19.2 FIELD WELDING:**			
X	a. Inspect groove, multi-pass, and fillet welds > 5/16"	Continuous	SI	Per AISC 360 (and AISC 341 as applicable), DSA IR 17-3.
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
+	**WOOD**			
+	**OTHER**			
X	**28. IFORCE PANEL CLIP INSTALLATION**	Continuous	IOR	SCREWS AND CLIPS INSTALLED PER APPROVED SUBMITTAL & NOTES ON PLANS

1 Soils testing and inspection: Geotechnical Verified Report - Form DSA-293
2 All Structural Testing: Laboratory Verified Report - Form DSA-291
3 Concrete Batch Plant inspection: Special inspection Verified Report - Form DSA-292
4 Shop Welding Inspection: Special inspection Verified Report - Form DSA-292
5 Field Welding Inspection: Special inspection Verified Report - Form DSA-292

SAMPLE - DSA-103

STRUCTURES WITH ONLY SPREAD FOOTINGS WITH POST INSTALLED ANCHORS

DSA-103 rev. 12/2013

Statement of Structural Tests & Special Inspections - 2013 CBC

INCREMENT # | DSA File No.: | Application No.: | Date Submitted: | Revised: | Revised:

School Name | District

IMPORTANT: This form is only a summary list of structural tests and special inspections required for the project. The actual tests and inspections must be performed as detailed on the DSA approved documents. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A.
NOTE: This form is also available for projects submitted for review under the 2007 and 2010 CBC.

INSTRUCTIONS: Click a plus sign (+) before any category or subcategory to reveal additional tests and special inspections. An "X" before a listed test or inspection indicates it is a mandatory requirement. A shaded box indicates a test or special inspection may be required, depending on the scope of the construction and other issues. A shaded box can be clicked indicating your selection of that test. Note: A minus (-) on a category or subcategory heading indicates that it can be collapsed. However, any selections you may have made will be retained. Click on the "COMPILE" button to show only the tests finally selected. For more information on use of this form, see DSA-103.INSTR.

Note: References are to the 2013 edition of the California Building Code (CBC) unless otherwise noted.

REQUIRED	TEST OR SPECIAL INSPECTION	TYPE	FREQUENCY (or per)	CODE REFERENCE AND NOTES
-	**SOILS**			
-	**1. GENERAL:**	Table 1705A.6		
X	a. Verify that: • soil has been prepared properly prior to placement of controlled fill and/or excavations for foundations, • foundation excavations are extended to proper depth and have reached proper material, and • materials below footings are adequate to achieve the design bearing capacity.	Periodic	OE*	* By geotechnical engineer or his or her qualified representative.
-	**4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):**	Table 1705A.7		
X	a. Inspect drilling operations and maintain complete and accurate records for each pier.	Continuous	OE*	* By geotechnical engineer or his or her qualified representative.
X	b. Verify locations of piers.	Continuous	PI	
X	c. Confirm pier diameters, plumbness, bell diameters (if applicable), lengths, and embedment into bedrock (if applicable). Record concrete or grout volumes.	Continuous	OE*	* By geotechnical engineer or his or her qualified representative.
X	d. Confirm adequate end strata bearing capacity.	Test	Lab*	* Under the supervision of the geotechnical engineer.
X	e. Concrete plans.	Provide test and inspection per CONCRETE section below.		
-	**CONCRETE**	Table 1705A.3		
-	**7. CAST IN PLACE CONCRETE**			
	Material Verification and Testing:			
X	a. Verify use of required design mix.	Periodic	SI & F*	* To be performed by batch-plant special inspector and project inspector.
X	b. Test reinforcing steel.	Test	Lab	1913A.2 (1913.2.E), ASTM A370, DSA IR 17-10
X	c. Perform slump, temperature, and (where required) air content tests.	Test	Lab	ASTM C172, ASTM C231.
X	d. Test concrete (compression).	Test	Lab	ACI 318 Section 5.6 and 1905A.1.3 (1913.3.1), ASTM C39.
	Inspection:			
X	a. Batch plant inspection	Continuous	SI	1705A.3.3: If approved by DSA, batch plant inspection may be reduced to periodic if plant complies with 1705A.3.3, Item 1, and requires first batch inspection, weighmaster, and batch tickets.
X	b. Inspect placement of formwork, reinforcing steel, embedded items and concrete. Inspect curing and form removal.	Continuous	PI*	* May be performed by a special inspector when specifically approved by DSA.
-	**11. POST-INSTALLED ANCHORS:**			
X	a. Inspect installation of post-installed anchors.	Continuous	SI	Table 1705A.3 * May be performed by the project inspector when specifically approved by DSA.
X	b. Test post-installed anchors.	Test	Lab	1910A.7 (1913.2.E)
+	**MASONRY**	TMS 402-11/ACI 530-11/ASCE 5-11 Table 1.19.3		
-	**STEEL**	Table 1705A.2.1		
-	**17. STRUCTURAL STEEL AND COLD-FORMED STEEL USED FOR STRUCTURAL PURPOSES**			
	Material Verification:			
X	a. Verify that all materials are appropriately marked and that: • Mill certificates indicate material properties that comply with requirements, • Material sizes, types and grades comply with requirements.	Periodic	-	* By special inspector when preformed off-site; by project inspector for steel shipped directly to project site without welding or fabrication.
X	b. Test unidentified materials.	Test	Lab	2858A.1 (2203.1.), ASTM A370.
X	c. Examine seam welds of structural tubes and pipes.	Periodic	SI*	* DSA IR 17-3.
	Inspection:			
X	d. Verify member locations, fastening and details constructed in the field.	Continuous	PI	
X	e. Verify stiffener locations, connection tab locations and all construction details fabricated in the shop.	Periodic	SI	
-	**19. WELDING:**			DSA IR 17-3, AWS D1.1 and AWS D1.8 (AWS D1.3 for cold formed steel).
	Verification of Materials, Equipment, Welders, etc:			
X	a. Verify weld filler material identification markings per AWS designation listed on the DSA approved documents and the WPS.	Periodic	SI	
X	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	
X	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.
-	**19.1 SHOP WELDING:**			
X	a. Inspect groove, multi-pass, and fillet welds > 5/16"	Continuous	SI	Per AISC 360 (and AISC 341 as applicable), DSA IR 17-3
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
-	**19.2 FIELD WELDING:**			
X	a. Inspect groove, multi-pass, and fillet welds > 5/16"	Continuous	SI	Per AISC 360 (and AISC 341 as applicable), DSA IR 17-3.
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
+	**WOOD**			
+	**OTHER**			
X	**28. IFORCE PANEL CLIP INSTALLATION**	Continuous	IOR	SCREWS AND CLIPS INSTALLED PER APPROVED SUBMITTAL & NOTES ON PLANS

1 Soils testing and inspection: Geotechnical Verified Report - Form DSA-293
2 All Structural Testing: Laboratory Verified Report - Form DSA-291
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5 Field Welding Inspection: Special inspection Verified Report - Form DSA-292

SAMPLE - DSA-103

STRUCTURES WITH ONLY SPREAD FOOTINGS WITH OUT POST INSTALLED ANCHORS

DSA-103 rev. 12/2013

Statement of Structural Tests & Special Inspections - 2013 CBC

INCREMENT # | DSA File No.: | Application No.: | Date Submitted: | Revised: | Revised:

School Name | District

IMPORTANT: This form is only a summary list of structural tests and special inspections required for the project. The actual tests and inspections must be performed as detailed on the DSA approved documents. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A.
NOTE: This form is also available for projects submitted for review under the 2007 and 2010 CBC.

INSTRUCTIONS: Click a plus sign (+) before any category or subcategory to reveal additional tests and special inspections. An "X" before a listed test or inspection indicates it is a mandatory requirement. A shaded box indicates a test or special inspection may be required, depending on the scope of the construction and other issues. A shaded box can be clicked indicating your selection of that test. Note: A minus (-) on a category or subcategory heading indicates that it can be collapsed. However, any selections you may have made will be retained. Click on the "COMPILE" button to show only the tests finally selected. For more information on use of this form, see DSA-103.INSTR.

Note: References are to the 2013 edition of the California Building Code (CBC) unless otherwise noted.

REQUIRED	TEST OR SPECIAL INSPECTION	TYPE	FREQUENCY (or per)	CODE REFERENCE AND NOTES
-	**SOILS**			
-	**1. GENERAL:**	Table 1705A.6		
X	a. Verify that: • soil has been prepared properly prior to placement of controlled fill and/or excavations for foundations, • foundation excavations are extended to proper depth and have reached proper material, and • materials below footings are adequate to achieve the design bearing capacity.	Periodic	OE*	* By geotechnical engineer or his or her qualified representative.
-	**CONCRETE**	Table 1705A.3		
-	**7. CAST IN PLACE CONCRETE**			
	Material Verification and Testing:			
X	a. Verify use of required design mix.	Periodic	SI & F*	* To be performed by batch-plant special inspector and project inspector.
X	b. Test reinforcing steel.	Test	Lab	1913A.2 (1913.2.E), ASTM A370, DSA IR 17-10
X	c. Perform slump, temperature, and (where required) air content tests.	Test	Lab	ASTM C172, ASTM C231.
X	d. Test concrete (compression).	Test	Lab	ACI 318 Section 5.6 and 1905A.1.3 (1913.3.1), ASTM C39.
	Inspection:			
X	a. Batch plant inspection	Continuous	SI	1705A.3.3: If approved by DSA, batch plant inspection may be reduced to periodic if plant complies with 1705A.3.3, Item 1, and requires first batch inspection, weighmaster, and batch tickets.
X	b. Inspect placement of formwork, reinforcing steel, embedded items and concrete. Inspect curing and form removal.	Continuous	PI*	* May be performed by a special inspector when specifically approved by DSA.
-	**11. POST-INSTALLED ANCHORS:**			
X	a. Inspect installation of post-installed anchors.	Continuous	SI	Table 1705A.3 * May be performed by the project inspector when specifically approved by DSA.
X	b. Test post-installed anchors.	Test	Lab	1910A.7 (1913.2.E)
+	**MASONRY**	TMS 402-11/ACI 530-11/ASCE 5-11 Table 1.19.3		
-	**STEEL**	Table 1705A.2.1		
-	**17. STRUCTURAL STEEL AND COLD-FORMED STEEL USED FOR STRUCTURAL PURPOSES**			
	Material Verification:			
X	a. Verify that all materials are appropriately marked and that: • Mill certificates indicate material properties that comply with requirements, • Material sizes, types and grades comply with requirements.	Periodic	-	* By special inspector when preformed off-site; by project inspector for steel shipped directly to project site without welding or fabrication.
X	b. Test unidentified materials.	Test	Lab	2858A.1 (2203.1.), ASTM A370.
X	c. Examine seam welds of structural tubes and pipes.	Periodic	SI*	* DSA IR 17-3.
	Inspection:			
X	d. Verify member locations, fastening and details constructed in the field.	Continuous	PI	
X	e. Verify stiffener locations, connection tab locations and all construction details fabricated in the shop.	Periodic	SI	
-	**19. WELDING:**			DSA IR 17-3, AWS D1.1 and AWS D1.8 (AWS D1.3 for cold formed steel).
	Verification of Materials, Equipment, Welders, etc:			
X	a. Verify weld filler material identification markings per AWS designation listed on the DSA approved documents and the WPS.	Periodic	SI	
X	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	
X	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.
-	**19.1 SHOP WELDING:**			
X	a. Inspect groove, multi-pass, and fillet welds > 5/16"	Continuous	SI	Per AISC 360 (and AISC 341 as applicable), DSA IR 17-3
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
-	**19.2 FIELD WELDING:**			
X	a. Inspect groove, multi-pass, and fillet welds > 5/16"	Continuous	SI	Per AISC 360 (and AISC 341 as applicable), DSA IR 17-3.
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
+	**WOOD**			
+	**OTHER**			
X	**28. IFORCE PANEL CLIP INSTALLATION**	Continuous	IOR	SCREWS AND CLIPS INSTALLED PER APPROVED SUBMITTAL & NOTES ON PLANS

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4 Shop Welding Inspection: Special inspection Verified Report - Form DSA-292
5 Field Welding Inspection: Special inspection Verified Report - Form DSA-292

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC FLS SS
Date JUL 3 1 2018

THE EXAMPLE FORM DSA-103'S SHOWN ON THIS SHEET ARE FOR ILLUSTRATION PURPOSES ONLY TO ASSIST IN THE COMPLETION OF FUTURE PROJECT-SPECIFIC FORM DSA-103'S. A FORM DSA-103 IS TO BE COMPLETED FOR EACH APPLICATION THAT THIS PC IS BEING INCORPORATED INTO AND ALL EXAMPLE FORM DSA-103'S ARE TO BE CROSSED OUT ON THIS DRAWING

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER JUSTIN K. ROSEMAN S 5895 EXP. 12-31-2015 CIVIL STATE OF CALIFORNIA

DATE SIGNED
JUNE 25, 2014

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP. NO. P. C. 04-115625
AC FLS SS
DATE JUN 25 2014

MBARC CONSTRUCTION INC.
LIC # 869760
B AND C51
674 RANCHEROS DR
SAN MARCOS, CA
92069
PHONE: (760) 744-4131
FAX: (760) 744-4449

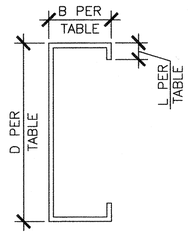
STE ENGINEERING
STRUCTURAL ENGINEERING
109 EAST ESCALONES
SAN CLEMENTE, CA 92672
PHONE: (949) 388-9333
FAX: (949) 388-3773

PHOTOVOLTAIC STRUCTURES
SAMPLE
DSA-103 FORMS

DRAWN
MAP
CHECKED
DKR
DATE
6/25/14
4STEL JOB NO.
13-1010
SHEET
S-4
4 OF 45 SHEETS

SECTION NAME	D (in)	B (in)	L (in)	GA	WT (lb/ft)	A (in2)	AXIS X-X			AXIS Y-Y		
							Ix (in4)	Sxe (in3)	rx (in)	Iy (in4)	Sy (in3)	ry (in)
C 8 x 4 14 GA	8	4.0	0.750	14	4.007	1.179	12.440	2.259	3.25	2.453	0.889	1.443
C 8 x 4 12 GA	8	4.0	0.750	12	5.950	1.750	18.270	3.687	3.23	3.554	1.289	1.425
C 10 x 4 14 GA	10	4.0	0.831	14	4.522	1.330	20.940	2.923	3.97	2.726	0.953	1.432
C 10 x 4 12 GA	10	4.0	0.916	12	6.783	1.995	31.138	5.242	3.95	4.093	1.444	1.433

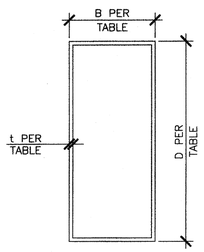
ALL PURLINS ARE ASTM A653, GR 55, F_y=55 ksi
ALL LIGHT GAGE STEEL DESIGNED USING 2007 AISI COLD-FORMED STEEL DESIGN MANUAL.
PROPERTIES PER A.E.P. STANDARD SIZES.
ACTUAL MANUFACTURER'S PROPERTIES MUST MEET OR EXCEED A.E.P. STANDARD PROPERTIES.



1 PURLIN DETAIL
SCALE: 3" = 1'-0"

SECTION NAME	D (in)	B (in)	t (in)	WEIGHT (lb/ft)	A (in2)	AXIS X-X			AXIS Y-Y		
						Ix (in4)	Sx (in3)	rx (in)	Iy (in4)	Sy (in3)	ry (in)
HSS8x8x1/2	8	8	1/2	48.85	14.40	131.0	32.8	3.02	131.0	32.8	3.02
HSS8x8x5/8	8	8	5/8	59.32	17.40	153.0	38.2	2.97	153.0	38.2	2.97
HSS10x8x5/8	10	8	5/8	67.82	19.90	266.0	53.2	3.66	187.0	46.8	3.07
HSS10x10x5/8	10	10	5/8	76.33	22.40	321.0	64.2	3.79	321.0	64.2	3.79
HSS10x10x3/4	10	10	3/4	89.50	26.30	364.0	72.8	3.72	364.0	72.8	3.72
HSS12x8x3/16	12	8	3/16	24.73	7.29	151.0	25.2	4.55	81.3	20.3	3.34
HSS12x8x1/4	12	8	1/4	32.63	9.59	196.0	32.7	4.52	105.0	26.2	3.31
HSS12x8x5/16	12	8	5/16	40.35	11.90	239.0	39.8	4.48	128.0	32.0	3.28
HSS12x8x3/8	12	8	3/8	47.90	14.10	279.0	46.5	4.45	149.0	37.2	3.25
HSS12x8x1/2	12	8	1/2	62.46	18.40	353.0	58.8	4.38	188.0	47.0	3.20
HSS12x8x5/8	12	8	5/8	76.33	22.40	419.0	69.8	4.32	221.0	55.2	3.14
HSS14x6x3/16	14	6	3/16	24.73	7.29	182.0	26.0	5.00	49.2	16.4	2.60
HSS14x6x1/4	14	6	1/4	32.63	9.59	237.0	33.9	4.97	63.4	21.1	2.57
HSS14x6x5/16	14	6	5/16	40.35	11.90	289.0	41.3	4.93	76.9	25.6	2.54
HSS14x6x3/8	14	6	3/8	47.90	14.10	337.0	48.1	4.89	89.1	29.7	2.51
HSS14x6x1/2	14	6	1/2	62.46	18.40	426.0	60.9	4.81	111.0	37.0	2.46
HSS14x6x5/8	14	6	5/8	76.33	22.40	504.0	72.0	4.74	130.0	43.3	2.41
HSS14x10x1/4	14	10	1/4	39.43	11.60	331.0	47.3	5.34	198.0	39.6	4.13
HSS14x10x5/16	14	10	5/16	48.86	14.40	406.0	58.0	5.31	242.0	48.4	4.10
HSS14x10x3/8	14	10	3/8	58.10	17.10	476.0	68.0	5.28	284.0	56.8	4.08
HSS14x10x1/2	14	10	1/2	76.07	22.40	608.0	86.9	5.21	361.0	72.2	4.01
HSS14x10x5/8	14	10	5/8	93.34	27.40	728.0	104.0	5.15	431.0	86.2	3.97

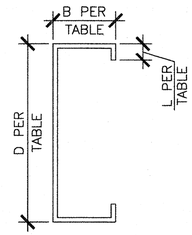
ALL BEAMS AND COLUMNS ARE ASTM A1085, F_y=50 ksi



2 HSS DETAIL
SCALE: 3" = 1'-0"

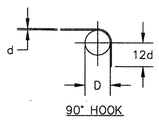
SECTION NAME	D (in)	B (in)	L (in)	GA	WT (lb/ft)	A (in2)	AXIS X-X			AXIS Y-Y		
							Ix (in4)	Sxe (in3)	rx (in)	Iy (in4)	Sy (in3)	ry (in)
C 6 x 2.5 16 GA	6	2.5	0.805	16	2.41	0.444	3.990	1.173	2.374	0.626	0.369	0.940

ALL BLOCKING SECTIONS ARE ASTM A653, GR 55, F_y=55 ksi
ALL LIGHT GAGE STEEL DESIGNED USING 2007 AISI COLD-FORMED STEEL DESIGN MANUAL.
PROPERTIES PER A.E.P. STANDARD SIZES.
ACTUAL MANUFACTURER'S PROPERTIES MUST MEET OR EXCEED A.E.P. STANDARD PROPERTIES.



4 BLOCKING DETAIL
SCALE: 6" = 1'-0"

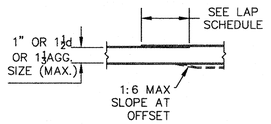
BEND SCHEDULE	
BAR SIZES	D
#3 THRU #8	6d
#9 THRU # 11	8d
#14 THRU #18	10d



90° HOOK

LAP SCHEDULE			
BAR SIZES	TOP BARS	OTHER BARS	ALL BARS
#3	21"	15"	24"
#4	29"	20"	26"
#5	36"	26"	32"
#6	46"	33"	28"
#7	63"	45"	44"
#8	82"	59"	-
#9	104"	74"	-
#10	132"	95"	-
#11	168"	116"	-

NOTES:
1. THESE LENGTHS SHALL BE USED UNLESS SPECIFICALLY DETAILED OTHERWISE.
2. TOP BARS ARE BARS LOCATED ≥12" FROM BOTTOM. OTHER BARS ARE BARS LOCATED WITHIN 12" FROM BOTTOM. THE LAP FOR ALL BARS SHALL BE USED IF ALL THE BARS TERMINATE WITHIN THE SAME LAP LENGTH.



LAP AND OFFSET

5 TYPICAL REINFORCEMENT BAR BENDS AND LAPS
SCALE: N.T.S.

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K. RESSLER S 5885 EXP. 06-30-2016 STATE OF CALIFORNIA CIVIL

7/22/15

DATE SIGNED
MMMM DD, 2015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
A 03 119217
AC ✓ FLS ✓ SS
DATE JUL 31 2015

SITE SPECIFIC DSA APPROVAL

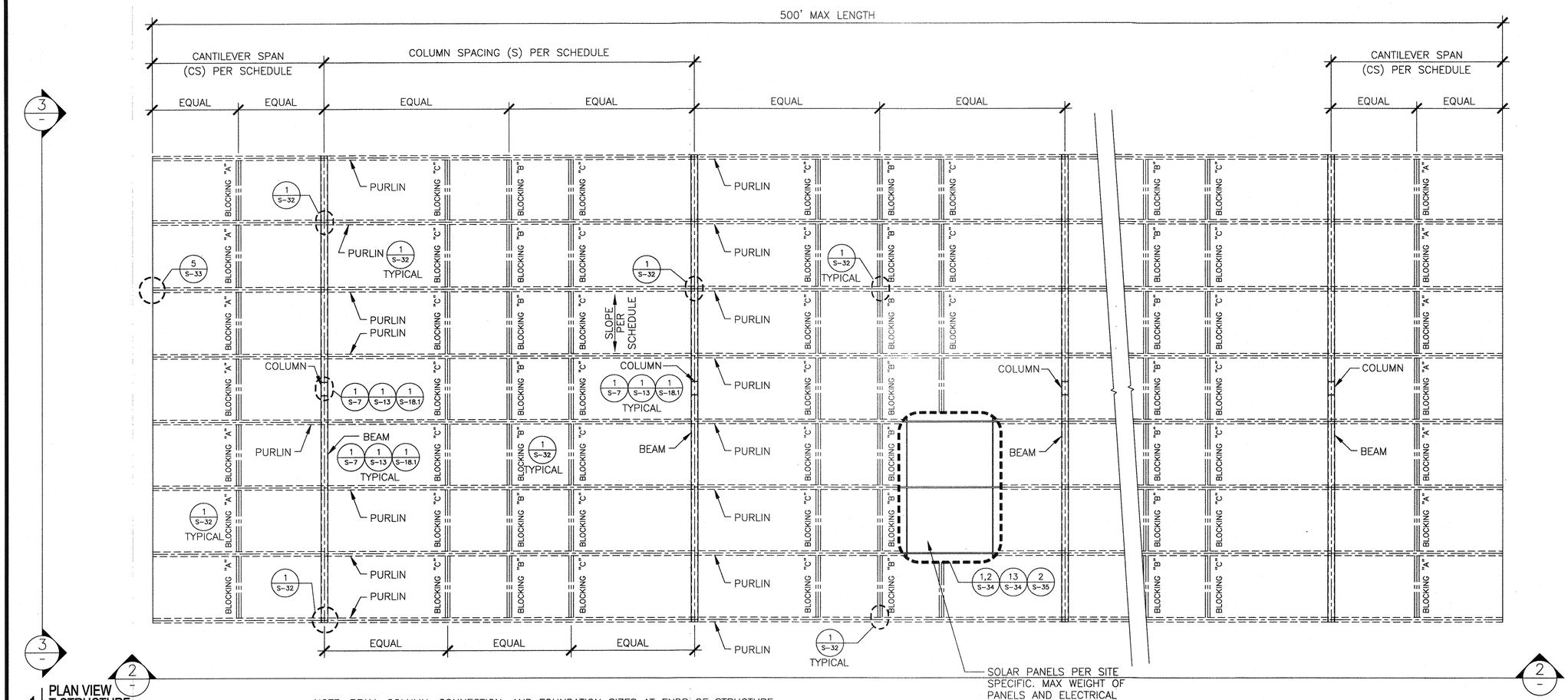
IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP. P. C. 04-115125
AC ✓ FLS SS
DATE JUL 29 2015
FOR - CHECK (PC) DOCUMENT
CODE: 2013 CBC
A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

MBARC CONSTRUCTION INC.
LIC # 869960 B AND C51
674 RANCHEROS DR SAN MARCOS, CA 92069
PHONE: (760) 744-4131
FAX: (760) 744-4449

4STEL ENGINEERING
STRUCTURAL ENGINEERING
109 EAST ESCALONES SAN CLEMENTE, CA 92672
PHONE: (949) 388-9333
FAX: (949) 388-3773

PHOTOVOLTAIC STRUCTURES SECTION PROPERTIES & REBAR DETAILS

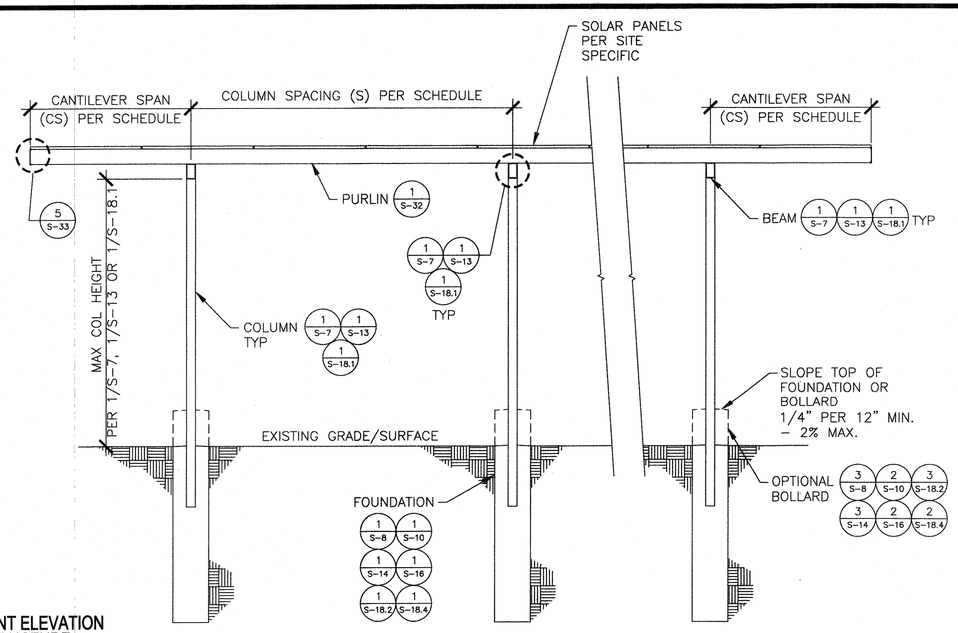
DRAWN MAP
CHECKED DKR
DATE 5/29/15
4STEL JOB NO. 13-1010
SHEET S-5
5 OF 46 SHEETS



1 PLAN VIEW T-STRUCTURE

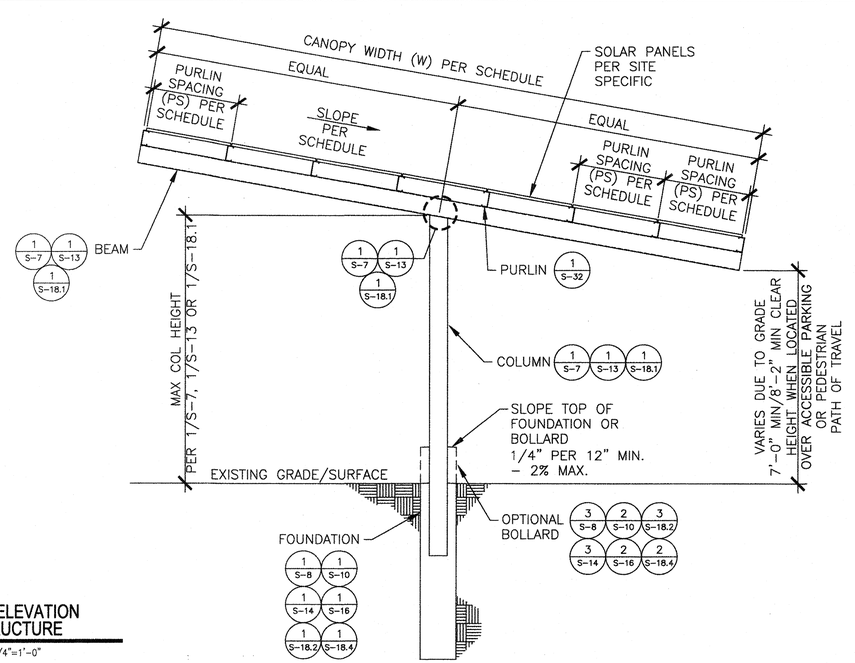
SCALE: 1/4"=1'-0"

NOTE: BEAM, COLUMN, CONNECTION, AND FOUNDATION SIZES AT ENDS OF STRUCTURE MAY NEED TO BE INCREASED DEPENDING ON PURLIN CANTILEVER. SEE NOTE 6/S-32.



2 FRONT ELEVATION T-STRUCTURE

SCALE: 1/4"=1'-0"



3 SIDE ELEVATION T-STRUCTURE

SCALE: 1/4"=1'-0"

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K. ROBERTS S 5685 EXP. 06-30-2016 STRUCTURAL

7/22/15

DATE SIGNED MMMM DD, 2015

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT

A 03 119217

AC ✓ FLS ✓ SS OK

DATE JUL 31 2015

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES

APP. P. C. 04-115325

AC FLS SS

DATE JUL 28 2015

PSI - CHECK (PC) DOCUMENT CODE: 2013 CBC SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

MBAR C CONSTRUCTION INC.
LIC. # 865960 B AND C51
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FAX: (949) 388-3773

PHOTOVOLTAIC STRUCTURES T-STRUCTURE FRAMING PLAN

DRAWN MAP
CHECKED DKR
DATE 5/29/15
4STEL JOB NO. 13-1010
SHEET S-6

6 OF 46 SHEETS

T-STRUCTURE BEAM/COLUMN SCHEDULE BASED ON R=1.25, Ss ≤ 1.7

I.D. #	MAX WIDTH (W)	MAX COLUMN SPACING (S)	ROOF SLOPE	GROUND SNOW LOAD	BEAM		BEAM TO COLUMN DETAIL	COLUMN		MAX COLUMN HEIGHT	LOADS TO FOUNDATIONS					
											AXIAL		SHEAR		MOMENT	
					SECTION	DETAIL		SECTION	DETAIL		GOVERNING LOAD COMBINATION	P (lb)	GOVERNING LOAD COMBINATION	V (lb)	GOVERNING LOAD COMBINATION	M (lb-ft)
T1	36' - 0"	18' - 0"	7.49° MAX	0 psf	HSS14x6x3/16	2/S-5	2/S-12	HSS14x6x1/4	2/S-5	15' - 0"	D + 0.6ωWDOWN-3	10,627	0.9D + E/1.4	3,815	0.9D + E/1.4	60,857
T2	36' - 9"	20' - 0"	7.49° MAX	0 psf	HSS14x6x3/16	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + 0.6ωWDOWN-3	11,769	0.9D + E/1.4	4,206	0.9D + E/1.4	66,506
T3	36' - 9"	27' - 0"	7.49° MAX	0 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x1/2	2/S-5	15' - 0"	D + 0.6ωWDOWN-3	15,980	0.9D + E/1.4	5,755	0.9D + E/1.4	89,723
T4	38' - 6"	18' - 0"	7.49° MAX	0 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + 0.6ωWDOWN-3	11,527	0.9D + E/1.4	4,331	0.9D + E/1.4	68,275
T5	38' - 6"	20' - 0"	7.49° MAX	0 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + 0.6ωWDOWN-3	12,602	0.9D + E/1.4	4,638	0.9D + E/1.4	73,481
T6	38' - 6"	27' - 0"	7.49° MAX	0 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x1/2	2/S-5	15' - 0"	D + 0.6ωWDOWN-3	16,696	0.9D + E/1.4	5,992	0.9D + E/1.4	93,671
T7	42' - 6"	18' - 0"	7.49° MAX	0 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x3/8	2/S-5	15' - 0"	D + 0.6ωWDOWN-3	12,775	0.9D + E/1.4	4,823	0.9D + E/1.4	75,546
T8	42' - 6"	20' - 0"	7.49° MAX	0 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x3/8	2/S-5	15' - 0"	D + 0.6ωWDOWN-3	13,962	0.9D + E/1.4	5,162	0.9D + E/1.4	81,290
T9	42' - 6"	27' - 0"	7.49° MAX	0 psf	HSS14x6x5/16	2/S-5	2/S-12	HSS14x6x1/2	2/S-5	15' - 0"	D + 0.6ωWDOWN-3	18,659	0.9D + E/1.4	6,809	0.9D + E/1.4	107,056
T10	36' - 9"	18' - 0"	7.49° MAX	20 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-3	17,882	0.9D + E/1.4	4,157	D + 0.2S + E/1.4	70,032
T11	36' - 9"	20' - 0"	7.49° MAX	20 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-3	19,670	0.9D + E/1.4	4,450	D + 0.2S + E/1.4	75,526
T12	38' - 6"	18' - 0"	7.49° MAX	20 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-3	18,705	0.9D + E/1.4	4,331	D + 0.2S + E/1.4	73,375
T13	38' - 6"	20' - 0"	7.49° MAX	20 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x3/8	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-3	20,691	0.9D + E/1.4	4,733	D + 0.2S + E/1.4	79,815
T14	42' - 6"	18' - 0"	7.49° MAX	20 psf	HSS14x6x5/16	2/S-5	2/S-12	HSS14x6x3/8	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-3	21,024	0.9D + E/1.4	5,099	D + 0.2S + E/1.4	86,105
T15	42' - 6"	20' - 0"	7.49° MAX	20 psf	HSS14x6x5/16	2/S-5	2/S-12	HSS14x6x1/2	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-3	23,309	0.9D + E/1.4	5,622	D + 0.2S + E/1.4	93,834
T51	36' - 0"	18' - 0"	10° MAX	0 psf	HSS14x6x3/16	2/S-5	2/S-12	HSS14x6x1/4	2/S-5	15' - 0"	D + 0.6ωWDOWN-2	13,956	0.9D + E/1.4	3,746	D + 0.6ωWDOWN-1	67,355
T52	36' - 0"	20' - 0"	10° MAX	0 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + 0.6ωWDOWN-2	15,751	0.9D + E/1.4	4,370	D + 0.6ωWDOWN-1	74,984
T53	36' - 0"	27' - 0"	10° MAX	0 psf	HSS14x6x5/16	2/S-5	2/S-12	HSS14x6x1/2	2/S-5	15' - 0"	D + 0.6ωWDOWN-2	21,253	0.9D + E/1.4	5,888	D + 0.6ωWDOWN-1	101,396
T54	38' - 4.5"	18' - 0"	10° MAX	0 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + 0.6ωWDOWN-2	15,259	0.9D + E/1.4	4,318	D + 0.6ωWDOWN-1	75,673
T55	38' - 4.5"	20' - 0"	10° MAX	0 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + 0.6ωWDOWN-2	16,751	0.9D + E/1.4	4,624	D + 0.6ωWDOWN-1	83,904
T56	38' - 4.5"	27' - 0"	10° MAX	0 psf	HSS14x6x5/16	2/S-5	2/S-12	HSS14x6x1/2	2/S-5	15' - 0"	D + 0.6ωWDOWN-2	22,593	0.9D + E/1.4	6,224	D + 0.6ωWDOWN-1	113,471
T57	41' - 10"	18' - 0"	10° MAX	0 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + 0.6ωWDOWN-2	16,580	0.9D + E/1.4	4,662	D + 0.6ωWDOWN-1	88,179
T58	41' - 10"	20' - 0"	10° MAX	0 psf	HSS14x6x5/16	2/S-5	2/S-12	HSS14x6x3/8	2/S-5	15' - 0"	D + 0.6ωWDOWN-2	18,637	0.9D + E/1.4	5,363	D + 0.6ωWDOWN-1	98,073
T59	41' - 10"	27' - 0"	10° MAX	0 psf	HSS14x6x1/2	2/S-5	2/S-12	HSS14x6x5/8	2/S-5	15' - 0"	D + 0.6ωWDOWN-2	25,664	0.9D + E/1.4	7,668	D + 0.6ωWDOWN-1	132,654
T60	36' - 0"	18' - 0"	10° MAX	20 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-2	19,218	0.9D + E/1.4	4,083	D + 0.5S + 0.6ωWDOWN-1	78,676
T61	36' - 0"	20' - 0"	10° MAX	20 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-2	21,157	0.9D + E/1.4	4,370	D + 0.5S + 0.6ωWDOWN-1	87,295
T62	38' - 4.5"	18' - 0"	10° MAX	20 psf	HSS14x6x1/4	2/S-5	2/S-12	HSS14x6x5/16	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-2	20,445	0.9D + E/1.4	4,318	D + 0.5S + 0.6ωWDOWN-1	88,253
T63	38' - 4.5"	20' - 0"	10° MAX	20 psf	HSS14x6x5/16	2/S-5	2/S-12	HSS14x6x3/8	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-2	22,918	0.9D + E/1.4	4,969	D + 0.5S + 0.6ωWDOWN-1	98,121
T64	41' - 10"	18' - 0"	10° MAX	20 psf	HSS14x6x5/16	2/S-5	2/S-12	HSS14x6x3/8	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-2	22,665	0.9D + E/1.4	5,029	D + 0.5S + 0.6ωWDOWN-1	103,371
T65	41' - 10"	20' - 0"	10° MAX	20 psf	HSS14x6x3/8	2/S-5	2/S-12	HSS14x6x1/2	2/S-5	15' - 0"	D + S + 0.5*0.6wWDOWN-2	25,448	0.9D + E/1.4	5,812	D + 0.5S + 0.6ωWDOWN-1	118,032

1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE AND/OR STRUCTURE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. LOADS TO FOUNDATION BASED ON ALTERNATIVE ASD LOAD COMBINATIONS WITH ω = 1.3. FOR LATERAL LOADS AND ω = 1.0 FOR VERTICAL LOADS.

1 R=1.25 T-STRUCTURE BEAM/COLUMN SCHEDULE
SCALE: N/A

T-STRUCTURE BEAM/COLUMN SCHEDULE BASED ON R=1.25, Ss ≤ 1.0

I.D. #	MAX WIDTH (W)	MAX COLUMN SPACING (S)	ROOF SLOPE	GROUND SNOW LOAD	BEAM		BEAM TO COLUMN DETAIL	COLUMN		MAX COLUMN HEIGHT
					SECTION	DETAIL		SECTION	DETAIL	
T66	42' - 6"	27' - 0"	7.49° MAX	0 psf	HSS14x6x5/16	2/S-5	2/S-12	HSS14x6x1/2	2/S-5	20' - 0"

1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE AND/OR STRUCTURE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. LOADS TO FOUNDATION BASED ON ALTERNATIVE ASD LOAD COMBINATIONS WITH ω = 1.3. FOR LATERAL LOADS AND ω = 1.0 FOR VERTICAL LOADS.

2 R=1.25 T-STRUCTURE BEAM/COLUMN SCHEDULE
SCALE: N/A

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER
DUSTIN K. ROSEVEAR
S 5885
EXP. 06-30-2016
STRUCTURAL
STATE OF CALIFORNIA

DATE SIGNED
December 23, 2015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
A 03 119217
AC ✓ FLS ✓ SS ✓
DATE JUL 31 2018

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP. P. C. 04-119125
Rev. Dgn 3
AC - FLS - SS PR
DATE 7/2/2018
FOR: CHECK (PC) DOCUMENT
CODE: 2013 CBC
A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

MBARC CONSTRUCTION INC.
LIC # 867960 B AND C51
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PHOTOVOLTAIC STRUCTURES R=1.25 T-STRUCTURE BEAM/COLUMN SCHEDULE

DRAWN MAP
CHECKED DKR
DATE 6/18/2018 3
4STEL JOB NO. 13-1010
SHEET S-7
7 OF 46 SHEETS

T-STRUCTURE NON-CONSTRAINED PIER FOUNDATION SCHEDULE BASED ON R=1.25, Ss ≤ 1.7

I.D. #	MAX WIDTH (W)	MAX COLUMN SPACING (S)	ROOF SLOPE	GROUND SNOW LOAD	FOUNDATION REINFORCEMENT	FOUNDATION DIAMETER	COLUMN EMBEDMENT (CE)	MAX TIE SPACING (TS) AT TOP	FOUNDATION DETAIL	PIER FOUNDATION				
										FOUNDATION WITH SOIL MATERIAL CLASS V (SOILS NOTES S-3)	FOUNDATION WITH SOIL MATERIAL CLASS W (SOILS NOTES S-3)	FOUNDATION WITH SOIL MATERIAL CLASS X (SOILS NOTES S-3)	FOUNDATION WITH SOIL MATERIAL CLASS Y (SOILS NOTES S-3)	FOUNDATION WITH SOIL MATERIAL CLASS Z (SOILS NOTES S-3)
										DEPTH	DEPTH	DEPTH	DEPTH	DEPTH
T1	36' - 0"	18' - 0"	7.49° MAX	0 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	15' - 0"	11' - 6"	9' - 9"	8' - 9"	7' - 6"
T2	36' - 9"	20' - 0"	7.49° MAX	0 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	15' - 6"	11' - 9"	10' - 3"	9' - 3"	7' - 9"
T3	36' - 9"	27' - 0"	7.49° MAX	0 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	17' - 6"	13' - 3"	11' - 6"	10' - 3"	8' - 9"
T4	38' - 6"	18' - 0"	7.49° MAX	0 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	15' - 9"	12' - 0"	10' - 3"	9' - 3"	8' - 0"
T5	38' - 6"	20' - 0"	7.49° MAX	0 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	16' - 3"	12' - 3"	10' - 6"	9' - 6"	8' - 3"
T6	38' - 6"	27' - 0"	7.49° MAX	0 psf	(5) - #8 VERT REBAR	24"	36"	6"	2/-	17' - 9"	13' - 6"	11' - 6"	10' - 6"	9' - 0"
T7	42' - 6"	18' - 0"	7.49° MAX	0 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	16' - 3"	12' - 6"	10' - 9"	9' - 6"	8' - 3"
T8	42' - 6"	20' - 0"	7.49° MAX	0 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	17' - 0"	13' - 0"	11' - 0"	10' - 0"	8' - 6"
T9	42' - 6"	27' - 0"	7.49° MAX	0 psf	(5) - #8 VERT REBAR	24"	36"	6"	2/-	18' - 9"	14' - 6"	12' - 6"	11' - 3"	9' - 6"
T10	36' - 9"	18' - 0"	7.49° MAX	20 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	15' - 9"	12' - 0"	10' - 3"	9' - 3"	8' - 0"
T11	36' - 9"	20' - 0"	7.49° MAX	20 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	16' - 6"	12' - 9"	10' - 9"	9' - 9"	8' - 3"
T12	38' - 6"	18' - 0"	7.49° MAX	20 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	16' - 3"	12' - 6"	10' - 9"	9' - 6"	8' - 3"
T13	38' - 6"	20' - 0"	7.49° MAX	20 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	17' - 0"	13' - 3"	11' - 0"	10' - 0"	8' - 6"
T14	42' - 6"	18' - 0"	7.49° MAX	20 psf	(4) - #8 VERT REBAR	24"	36"	6"	2/-	17' - 6"	13' - 6"	11' - 3"	10' - 3"	8' - 9"
T15	42' - 6"	20' - 0"	7.49° MAX	20 psf	(5) - #8 VERT REBAR	24"	36"	6"	2/-	18' - 3"	15' - 0"	12' - 0"	11' - 3"	9' - 3"
T51	36' - 0"	18' - 0"	10° MAX	0 psf	(4) - #8 VERT REBAR	24"	48"	6"	2/-	17' - 6"	13' - 3"	11' - 3"	10' - 3"	8' - 9"
T52	36' - 0"	20' - 0"	10° MAX	0 psf	(5) - #8 VERT REBAR	24"	48"	6"	2/-	18' - 3"	13' - 9"	11' - 9"	10' - 6"	9' - 0"
T53	36' - 0"	27' - 0"	10° MAX	0 psf	(6) - #8 VERT REBAR	24"	48"	6"	2/-	20' - 6"	15' - 6"	13' - 3"	12' - 0"	10' - 3"
T54	38' - 4.5"	18' - 0"	10° MAX	0 psf	(5) - #8 VERT REBAR	24"	48"	6"	2/-	18' - 3"	13' - 9"	11' - 9"	10' - 9"	9' - 3"
T55	38' - 4.5"	20' - 0"	10° MAX	0 psf	(5) - #8 VERT REBAR	24"	48"	6"	2/-	19' - 0"	14' - 6"	12' - 3"	11' - 0"	9' - 6"
T56	38' - 4.5"	27' - 0"	10° MAX	0 psf	(7) - #8 VERT REBAR	24"	48"	6"	2/-	21' - 6"	16' - 3"	13' - 9"	12' - 6"	10' - 9"
T57	41' - 10"	18' - 0"	10° MAX	0 psf	(6) - #8 VERT REBAR	24"	48"	6"	2/-	19' - 6"	14' - 9"	12' - 6"	11' - 3"	9' - 9"
T58	41' - 10"	20' - 0"	10° MAX	0 psf	(6) - #8 VERT REBAR	24"	48"	6"	2/-	20' - 3"	15' - 3"	13' - 0"	11' - 9"	10' - 0"
T59	41' - 10"	27' - 0"	10° MAX	0 psf	(9) - #8 VERT REBAR	24"	48"	6"	2/-	23' - 0"	17' - 3"	14' - 9"	13' - 3"	11' - 3"
T60	36' - 0"	18' - 0"	10° MAX	20 psf	(5) - #8 VERT REBAR	24"	48"	6"	2/-	18' - 3"	14' - 0"	12' - 0"	10' - 9"	9' - 3"
T61	36' - 0"	20' - 0"	10° MAX	20 psf	(5) - #8 VERT REBAR	24"	48"	6"	2/-	19' - 0"	14' - 6"	12' - 3"	11' - 0"	9' - 6"
T62	38' - 4.5"	18' - 0"	10° MAX	20 psf	(5) - #8 VERT REBAR	24"	48"	6"	2/-	19' - 3"	14' - 6"	12' - 6"	11' - 3"	9' - 6"
T63	38' - 4.5"	20' - 0"	10° MAX	20 psf	(6) - #8 VERT REBAR	24"	48"	6"	2/-	20' - 0"	15' - 3"	13' - 0"	11' - 6"	10' - 0"
T64	41' - 10"	18' - 0"	10° MAX	20 psf	(6) - #8 VERT REBAR	24"	48"	6"	2/-	20' - 6"	15' - 6"	13' - 3"	11' - 9"	10' - 3"
T65	41' - 10"	20' - 0"	10° MAX	20 psf	(7) - #8 VERT REBAR	24"	48"	6"	2/-	21' - 3"	16' - 3"	13' - 9"	12' - 3"	10' - 6"

1 R=1.25 T-STRUCTURE NON-CONSTRAINED PIER FOUNDATION SCHEDULE

SCALE: N/A

1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE AND/OR STRUCTURE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. SEE SOILS NOTES ON SHEET S-3 FOR INFORMATION ON SOILS CLASS SELECTION.
4. FOR SITUATIONS WHERE WATER MITIGATION IS NECESSARY, OR FOR OTHER CONDITIONS REQUIRING MITIGATION, REFER TO DETAIL 2/- FOR SLEEVED FOUNDATION OPTION.

3

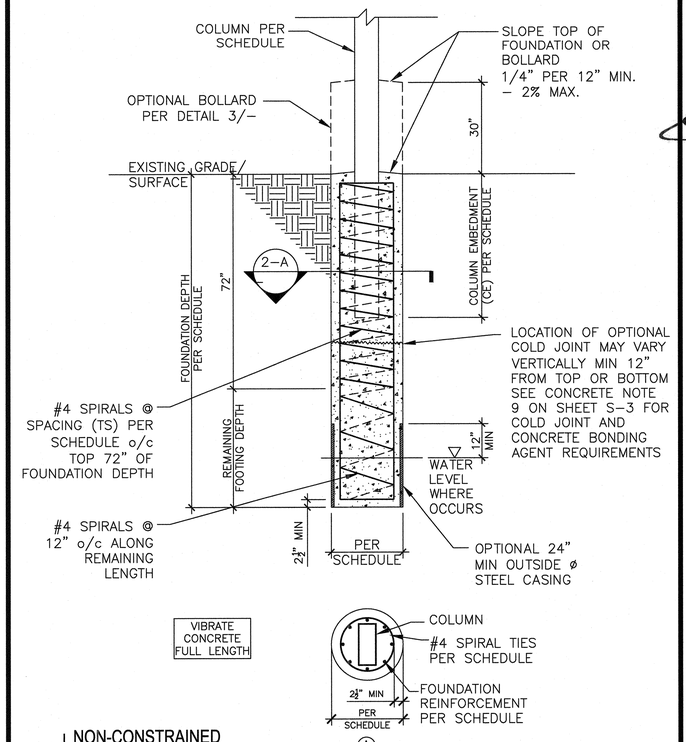
T-STRUCTURE NON-CONSTRAINED PIER FOUNDATION SCHEDULE BASED ON R=1.25, Ss ≤ 1.0

I.D. #	MAX WIDTH (W)	MAX COLUMN SPACING (S)	ROOF SLOPE	GROUND SNOW LOAD	FOUNDATION REINFORCEMENT	FOUNDATION DIAMETER	COLUMN EMBEDMENT (CE)	MAX TIE SPACING (TS) AT TOP	FOUNDATION DETAIL	PIER FOUNDATION				
										FOUNDATION WITH SOIL MATERIAL CLASS V (SOILS NOTES S-3)	FOUNDATION WITH SOIL MATERIAL CLASS W (SOILS NOTES S-3)	FOUNDATION WITH SOIL MATERIAL CLASS X (SOILS NOTES S-3)	FOUNDATION WITH SOIL MATERIAL CLASS Y (SOILS NOTES S-3)	FOUNDATION WITH SOIL MATERIAL CLASS Z (SOILS NOTES S-3)
										DEPTH	DEPTH	DEPTH	DEPTH	DEPTH
T66	42' - 6"	27' - 0"	7.49° MAX	0 psf	(5) - #8 VERT REBAR	24"	36"	6"	2/-	19' - 3"	14' - 9"	12' - 6"	11' - 3"	9' - 9"

2 R=1.25 T-STRUCTURE NON-CONSTRAINED PIER FOUNDATION SCHEDULE

SCALE: N/A

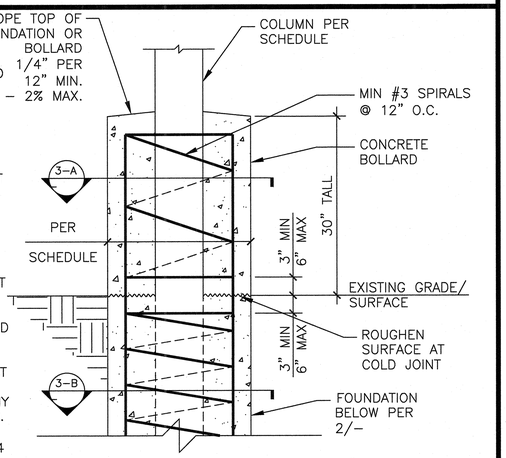
1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE AND/OR STRUCTURE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. SEE SOILS NOTES ON SHEET S-3 FOR INFORMATION ON SOILS CLASS SELECTION.
4. FOR SITUATIONS WHERE WATER MITIGATION IS NECESSARY, OR FOR OTHER CONDITIONS REQUIRING MITIGATION, REFER TO DETAIL 2/- FOR SLEEVED FOUNDATION OPTION.



2 NON-CONSTRAINED PIER FOUNDATION DETAIL

SCALE: 1/2" = 1'–0"

NOTES:
1. CONCRETE BOLLARDS TO BE POURED IN A SECOND POUR AFTER THE FOUNDATION BELOW GRADE IS POURED. CONCRETE BONDING AGENT TO BE USED. DSA INSPECTOR TO PERIODICALLY INSPECT THE INSTALLATION OF BONDING AGENT.
2. VERTICAL BARS IN THE NONSTRUCTURAL BOLLARD ARE PERMITTED TO BE WET SET INTO THE STRUCTURAL FOUNDATION, PROVIDED THE FOUNDATION IS SUFFICIENTLY WORKABLE SO AS NOT TO REQUIRE HAMMERING IN OR ANY OTHER SUCH METHOD. WET SET SHALL BE PERFORMED USING #4 BARS WITH MINIMUM 20" EMBEDMENT.



- MIN (4) VERT BARS CONTINUOUS TO 3" BELOW TOP OF BOLLARD UNLESS WET SET IS PERFORMED PER NOTE 2
- ALL REMAINING BARS STOP 3" BELOW GRADE

NOTE:
NUMBER AND SIZES OF BARS VARY SEE FOUNDATION CHARTS.

3 OPTIONAL CONCRETE BOLLARD

SCALE: 1" = 1'–0"

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K. ROSEMAN S 5885 EXP. 06-30-2016 STRUCTURAL CIVIL

DATE SIGNED
December 23, 2015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
A 03 119217
AC FLS SS
DATE JUL 3 1 2018

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP. P. C. 04-119125
Revision 3
AC PR FLS SS
DATE 7/2/2018
PC = CHECK (PC) DOCUMENTS CODE: 2013 CBC
A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

MBARC CONSTRUCTION INC.
LIC # 865960 B AND C51
674 RANCHEROS DR SAN MARCOS, CA 92069
PHONE: (760) 744-4131
FAX: (760) 744-4449

4STEL ENGINEERING
STRUCTURAL ENGINEERING
109 EAST ESCALONES SAN CLEMENTE, CA 92672
PHONE: (949) 388-9333
FAX: (949) 388-3773

PHOTOVOLTAIC STRUCTURES
R=1.25 T-STRUCTURE NON-CONSTRAINED PIER FOUNDATION SCHEDULE

DRAWN MAP
CHECKED DKR
DATE 6/18/2018 3
4STEL JOB NO. 13-1010
SHEET S-8
8 OF 46 SHEETS

T-STRUCTURE SPREAD FOOTING SCHEDULE BASED ON R=1.25, Ss ≤ 1.7

I.D. #	MAX WIDTH (W)	MAX COLUMN SPACING (S)	ROOF SLOPE	GROUND SNOW LOAD	FOOTING REINFORCEMENT	FOOTING DETAIL	SPREAD FOOTINGS FOR SOIL MATERIAL CLASS V (SOILS NOTES S-3)
T1	36' - 9"	18' - 0"	7.49° MAX	0 psf	#6 BARS @ 15" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	8'-6" x 8'-6" x 30" DEEP
T2	36' - 9"	20' - 0"	7.49° MAX	0 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	8'-9" x 8'-9" x 30" DEEP
T3	36' - 9"	27' - 0"	7.49° MAX	0 psf	#6 BARS @ 15" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-9" x 9'-9" x 30" DEEP
T4	38' - 6"	18' - 0"	7.49° MAX	0 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-0" x 9'-0" x 30" DEEP
T5	38' - 6"	20' - 0"	7.49° MAX	0 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-0" x 9'-0" x 30" DEEP
T6	38' - 6"	27' - 0"	7.49° MAX	0 psf	#6 BARS @ 15" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-9" x 9'-9" x 30" DEEP
T7	42' - 6"	18' - 0"	7.49° MAX	0 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-3" x 9'-3" x 30" DEEP
T8	42' - 6"	20' - 0"	7.49° MAX	0 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-6" x 9'-6" x 30" DEEP
T9	42' - 6"	27' - 0"	7.49° MAX	0 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	10'-3" x 10'-3" x 30" DEEP
T10	36' - 9"	18' - 0"	7.49° MAX	20 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	8'-9" x 8'-9" x 30" DEEP
T11	36' - 9"	20' - 0"	7.49° MAX	20 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-0" x 9'-0" x 30" DEEP
T12	38' - 6"	18' - 0"	7.49° MAX	20 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-0" x 9'-0" x 30" DEEP
T13	38' - 6"	20' - 0"	7.49° MAX	20 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-3" x 9'-3" x 30" DEEP
T14	42' - 6"	18' - 0"	7.49° MAX	20 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-3" x 9'-3" x 30" DEEP
T15	42' - 6"	20' - 0"	7.49° MAX	20 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-6" x 9'-6" x 30" DEEP
T51	36' - 0"	18' - 0"	10° MAX	0 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-3" x 9'-3" x 30" DEEP
T52	36' - 0"	20' - 0"	10° MAX	0 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-6" x 9'-6" x 30" DEEP
T53	36' - 0"	27' - 0"	10° MAX	0 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	10'-6" x 10'-6" x 30" DEEP
T54	38' - 4.5"	18' - 0"	10° MAX	0 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-6" x 9'-6" x 30" DEEP
T55	38' - 4.5"	20' - 0"	10° MAX	0 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	10'-0" x 10'-0" x 30" DEEP
T56	38' - 4.5"	27' - 0"	10° MAX	0 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	11'-0" x 11'-0" x 30" DEEP
T57	41' - 10"	18' - 0"	10° MAX	0 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	10'-0" x 10'-0" x 30" DEEP
T58	41' - 10"	20' - 0"	10° MAX	0 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	10'-6" x 10'-6" x 30" DEEP
T59	41' - 10"	27' - 0"	10° MAX	0 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	11'-6" x 11'-6" x 30" DEEP
T60	36' - 0"	18' - 0"	10° MAX	20 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-3" x 9'-3" x 30" DEEP
T61	36' - 0"	20' - 0"	10° MAX	20 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-6" x 9'-6" x 30" DEEP
T62	38' - 4.5"	18' - 0"	10° MAX	20 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-6" x 9'-6" x 30" DEEP
T63	38' - 4.5"	20' - 0"	10° MAX	20 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	10'-0" x 10'-0" x 30" DEEP
T64	41' - 10"	18' - 0"	10° MAX	20 psf	#6 BARS @ 17" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-3" x 9'-3" x 30" DEEP
T65	41' - 10"	20' - 0"	10° MAX	20 psf	#6 BARS @ 15" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	9'-9" x 9'-9" x 30" DEEP

1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE AND/OR STRUCTURE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. SEE SOILS NOTES ON SHEET S-3 FOR INFORMATION ON SOILS CLASS SELECTION.

1 R=1.25 T-STRUCTURE SPREAD FOOTING SCHEDULE

SCALE: N/A

T-STRUCTURE SPREAD FOOTING SCHEDULE BASED ON R=1.25, Ss ≤ 1.0

I.D. #	MAX WIDTH (W)	MAX COLUMN SPACING (S)	ROOF SLOPE	GROUND SNOW LOAD	FOOTING REINFORCEMENT	FOOTING DETAIL	SPREAD FOOTINGS FOR SOIL MATERIAL CLASS V (SOILS NOTES S-3)
T66	42' - 6"	27' - 0"	7.49° MAX	0 psf	#6 BARS @ 16" O.C. MAX EACH WAY TOP & BOTTOM	2 / -	10'-3" x 10'-3" x 30" DEEP

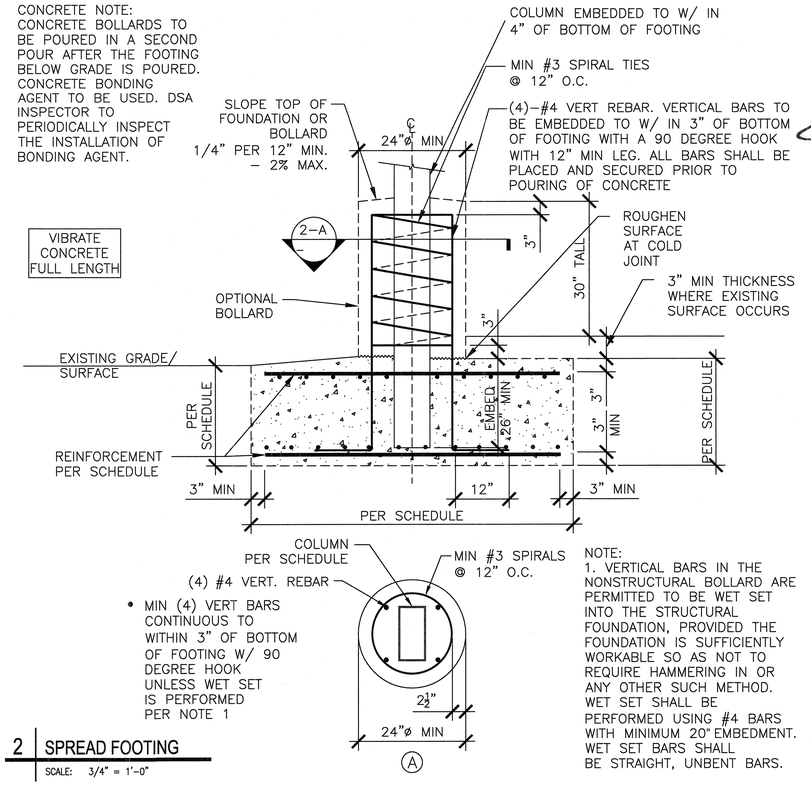
3

1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE AND/OR STRUCTURE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. SEE SOILS NOTES ON SHEET S-3 FOR INFORMATION ON SOILS CLASS SELECTION.

2 R=1.25 T-STRUCTURE SPREAD FOOTING SCHEDULE

SCALE: N/A

CONCRETE NOTE:
CONCRETE BOLLARDS TO BE POURED IN A SECOND POUR AFTER THE FOOTING BELOW GRADE IS POURED. CONCRETE BONDING AGENT TO BE USED. DSA INSPECTOR TO PERIODICALLY INSPECT THE INSTALLATION OF BONDING AGENT.



NOTE:
1. VERTICAL BARS IN THE NONSTRUCTURAL BOLLARD ARE PERMITTED TO BE WET SET INTO THE STRUCTURAL FOUNDATION, PROVIDED THE FOUNDATION IS SUFFICIENTLY WORKABLE SO AS NOT TO REQUIRE HAMMERING IN OR ANY OTHER SUCH METHOD. WET SET SHALL BE PERFORMED USING #4 BARS WITH MINIMUM 20" EMBEDMENT. WET SET BARS SHALL BE STRAIGHT, UNBENT BARS.

2 SPREAD FOOTING

SCALE: 3/4" = 1'–0"

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K. RESSLER S 5885 EXP. 06-30-2016 STRUCTURAL CIVIL

DATE SIGNED December 23, 2015

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT
A 03 119217
AC ___ FLS ___ SS ☑
DATE JUL 3 1 2018

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES
APP. # P. C. 04-115425
Revision 3
AC ___ FLS ___ SS PR
DATE 7/2/2018
FOR: CHECK (PC) DOCUMENT CODE 2013 CRC
A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

MBARC CONSTRUCTION INC.
LIC # 867960 B AND C51
674 RANCHEROS DR SAN MARCOS, CA 92069
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STEL ENGINEERING
STRUCTURAL ENGINEERING
109 EAST ESCALONES SAN CLEMENTE, CA 92672
PHONE: (949) 388-9333
FAX: (949) 388-3773

PHOTOVOLTAIC STRUCTURES
R=1.25 T-STRUCTURE SPREAD FOOTING SCHEDULE

DRAWN MAP
CHECKED DKR
DATE ~~6/18/2018~~ 3
4STEL JOB NO. 13-1010
SHEET S-10
10 OF 46 SHEETS

T-STRUCTURE BEAM TO COLUMN CONNECTION SCHEDULE BASED ON R=1.25, Ss ≤ 1.7

I.D. #	MAX WIDTH (W)	MAX COLUMN SPACING (S)	ROOF SLOPE	GROUND SNOW LOAD	BEAM TO COLUMN DETAIL	BEAM TO COLUMN SIDE PLATE	MIN WELD THICKNESS (t)	MIN STRUCTURAL WELD LENGTH (lv)	MIN STRUCTURAL WELD LENGTH (lh)
T1	36' - 9"	18' - 0"	7.49° MAX	0 psf	2 -	11 7/8" x 25 3/4" x 5/16" THICK	3/16" THICK	11.5" VERTICAL	11.5" HORIZONTAL
T2	36' - 9"	20' - 0"	7.49° MAX	0 psf	2 -	11 1/2" x 25 7/8" x 3/8" THICK	3/16" THICK	11.5" VERTICAL	11.5" HORIZONTAL
T3	36' - 9"	27' - 0"	7.49° MAX	0 psf	2 -	10 3/4" x 25 5/8" x 1/2" THICK	3/16" THICK	11.5" VERTICAL	10.5" HORIZONTAL
T4	38' - 6"	18' - 0"	7.49° MAX	0 psf	2 -	11 1/2" x 25 1/2" x 3/8" THICK	3/16" THICK	11" VERTICAL	11.5" HORIZONTAL
T5	38' - 6"	20' - 0"	7.49° MAX	0 psf	2 -	11 1/2" x 25 1/2" x 3/8" THICK	3/16" THICK	11" VERTICAL	11.5" HORIZONTAL
T6	38' - 6"	27' - 0"	7.49° MAX	0 psf	2 -	10 3/4" x 25 5/8" x 1/2" THICK	3/16" THICK	11.5" VERTICAL	10.5" HORIZONTAL
T7	42' - 6"	18' - 0"	7.49° MAX	0 psf	2 -	11 1/4" x 25 5/8" x 3/8" THICK	3/16" THICK	11.5" VERTICAL	11" HORIZONTAL
T8	42' - 6"	20' - 0"	7.49° MAX	0 psf	2 -	11 1/4" x 25 5/8" x 3/8" THICK	3/16" THICK	11.5" VERTICAL	11" HORIZONTAL
T9	42' - 6"	27' - 0"	7.49° MAX	0 psf	2 -	10 3/4" x 25 3/8" x 1/2" THICK	1/4" THICK	11" VERTICAL	10.5" HORIZONTAL
T10	36' - 9"	18' - 0"	7.49° MAX	20 psf	2 -	11 1/2" x 25 1/2" x 3/8" THICK	3/16" THICK	11" VERTICAL	11.5" HORIZONTAL
T11	36' - 9"	20' - 0"	7.49° MAX	20 psf	2 -	11 1/2" x 25 1/2" x 3/8" THICK	3/16" THICK	11" VERTICAL	11.5" HORIZONTAL
T12	38' - 6"	18' - 0"	7.49° MAX	20 psf	2 -	11 1/2" x 25 1/2" x 3/8" THICK	3/16" THICK	11" VERTICAL	11.5" HORIZONTAL
T13	38' - 6"	20' - 0"	7.49° MAX	20 psf	2 -	11 1/4" x 25 5/8" x 3/8" THICK	3/16" THICK	11.5" VERTICAL	11" HORIZONTAL
T14	42' - 6"	18' - 0"	7.49° MAX	20 psf	2 -	11 1/4" x 25 1/4" x 3/8" THICK	3/16" THICK	11" VERTICAL	11" HORIZONTAL
T15	42' - 6"	20' - 0"	7.49° MAX	20 psf	2 -	10 3/4" x 25 3/8" x 1/2" THICK	1/4" THICK	11" VERTICAL	10.5" HORIZONTAL
T51	36' - 0"	18' - 0"	10° MAX	0 psf	2 -	11 7/8" x 25 1/2" x 5/16" THICK	3/16" THICK	11" VERTICAL	11.5" HORIZONTAL
T52	36' - 0"	20' - 0"	10° MAX	0 psf	2 -	11 1/2" x 25 1/4" x 3/8" THICK	3/16" THICK	11" VERTICAL	11.5" HORIZONTAL
T53	36' - 0"	27' - 0"	10° MAX	0 psf	2 -	10 3/4" x 25" x 5/8" THICK	5/16" THICK	10.5" VERTICAL	10.5" HORIZONTAL
T54	38' - 4.5"	18' - 0"	10° MAX	0 psf	2 -	11 1/2" x 25 1/4" x 3/8" THICK	3/16" THICK	11" VERTICAL	11.5" HORIZONTAL
T55	38' - 4.5"	20' - 0"	10° MAX	0 psf	2 -	11 1/2" x 25 1/4" x 1/2" THICK	1/4" THICK	11" VERTICAL	11.5" HORIZONTAL
T56	38' - 4.5"	27' - 0"	10° MAX	0 psf	2 -	10 3/4" x 25" x 3/4" THICK	5/16" THICK	10.5" VERTICAL	10.5" HORIZONTAL
T57	41' - 10"	18' - 0"	10° MAX	0 psf	2 -	11 1/2" x 25 1/4" x 1/2" THICK	1/4" THICK	11" VERTICAL	11.5" HORIZONTAL
T58	41' - 10"	20' - 0"	10° MAX	0 psf	2 -	11 1/4" x 24 7/8" x 5/8" THICK	5/16" THICK	10.5" VERTICAL	11" HORIZONTAL
T59	41' - 10"	27' - 0"	10° MAX	0 psf	2 -	10 1/8" x 24 1/4" x 7/8" THICK	7/16" THICK	10" VERTICAL	10" HORIZONTAL
T60	36' - 0"	18' - 0"	10° MAX	20 psf	2 -	11 1/2" x 25 1/4" x 3/8" THICK	3/16" THICK	11" VERTICAL	11.5" HORIZONTAL
T61	36' - 0"	20' - 0"	10° MAX	20 psf	2 -	11 1/2" x 25 1/4" x 1/2" THICK	1/4" THICK	11" VERTICAL	11.5" HORIZONTAL
T62	38' - 4.5"	18' - 0"	10° MAX	20 psf	2 -	11 1/2" x 25 1/4" x 1/2" THICK	1/4" THICK	11" VERTICAL	11.5" HORIZONTAL
T63	38' - 4.5"	20' - 0"	10° MAX	20 psf	2 -	11 1/4" x 24 7/8" x 1/2" THICK	1/4" THICK	10.5" VERTICAL	11" HORIZONTAL
T64	41' - 10"	18' - 0"	10° MAX	20 psf	2 -	11 1/4" x 24 7/8" x 1/2" THICK	1/4" THICK	10.5" VERTICAL	11" HORIZONTAL
T65	41' - 10"	20' - 0"	10° MAX	20 psf	2 -	10 3/4" x 24 3/4" x 5/8" THICK	5/16" THICK	10.5" VERTICAL	10.5" HORIZONTAL

1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE AND/OR STRUCTURE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.

1 R=1.25 T-STRUCTURE BEAM TO COLUMN SCHEDULE
SCALE: N/A

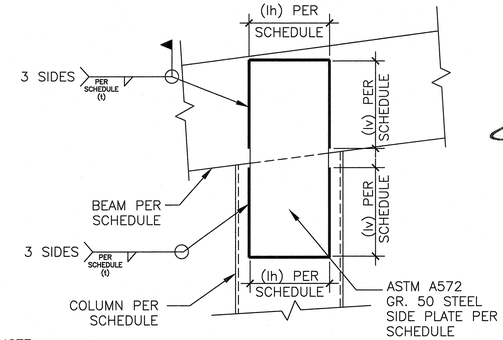
T-STRUCTURE BEAM TO COLUMN CONNECTION SCHEDULE BASED ON R=1.25, Ss ≤ 1.0

I.D. #	MAX WIDTH (W)	MAX COLUMN SPACING (S)	ROOF SLOPE	GROUND SNOW LOAD	BEAM TO COLUMN DETAIL	BEAM TO COLUMN SIDE PLATE	MIN WELD THICKNESS (t)	MIN STRUCTURAL WELD LENGTH (lv)	MIN STRUCTURAL WELD LENGTH (lh)
T66	42' - 6"	27' - 0"	7.49° MAX	0 psf	2 -	10 3/4" x 25 3/8" x 9/16" THICK	1/4" THICK	11" VERTICAL	10.5" HORIZONTAL

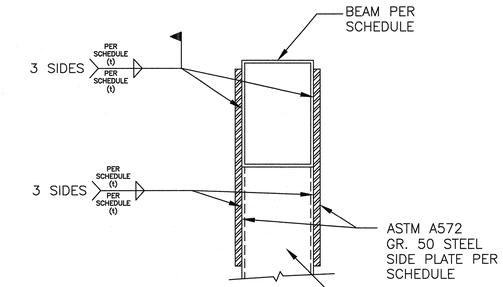
3

1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE AND/OR STRUCTURE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.

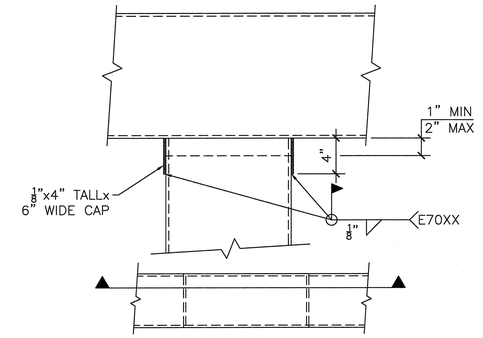
2 R=1.25 T-STRUCTURE BEAM TO COLUMN SCHEDULE
SCALE: N/A



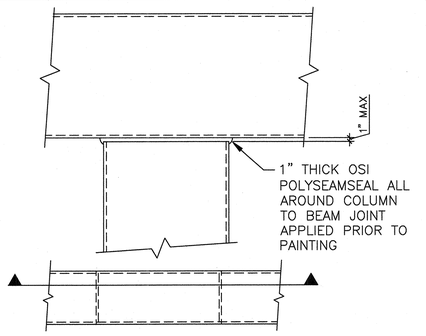
NOTE:
1. WELD TO BE ALL AROUND PLATE. PORTIONS OF THE WELD ALL AROUND JOINT ARE STRUCTURAL AND OTHER PORTIONS ARE NON STRUCTURAL. MINIMUM STRUCTURAL WELD LENGTHS (lv) AND (lh) PER SCHEDULE. WELDS BEYOND THESE MIN LENGTHS ARE NON STRUCTURAL SEAL WELDS.
2. PURLIN, SOLAR PANEL NOT SHOWN



2 BEAM TO COLUMN
SCALE: 1-1/2" = 1'-0"



3 BEAM TO COLUMN CORROSION PROTECTION OPTION 1
SCALE: 1 1/2" = 1'-0"



4 BEAM TO COLUMN CORROSION PROTECTION OPTION 2
SCALE: 1 1/2" = 1'-0"

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DERIK K. RESSNER S 5885 EXP. 06-30-2016 STATE OF CALIFORNIA

DATE SIGNED
December 23, 2015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
A 03 119217
AC ✓ FLS ✓ SS CT
DATE JUL 31 2018

SITE SPECIFIC DSA APPROVAL

~~IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES~~
~~APP. P. C. 04-119125 Rev. NOR 3~~
~~AC - FLS - SS PR~~
~~DATE 7/2/2018~~
~~FOR: CHECK (PC) DOCUMENT CODE: 2013 CBC SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED.~~

MBARC CONSTRUCTION INC.
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PHOTOVOLTAIC STRUCTURES
R=1.25 T-STRUCTURE BEAM TO COLUMN SCHEDULE

DRAWN MAP
CHECKED DKR
DATE 6/18/2018 3
4STEL JOB NO. 13-1010
SHEET S-12
12 OF 46 SHEETS

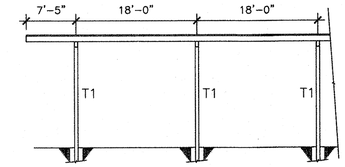
I.D. #	MAX PURLIN SPACING (PS)	MAX COLUMN SPACING (S)	MAX CANTILEVER SPAN, NO BLOCKING (CS)	MAX CANTILEVER SPAN, BLOCKING (CS)	MAX GROUND SNOW LOAD	PURLIN		BLOCKING "A" MID SPAN OF CANTILEVER		BLOCKING "B" MID SPAN OF SIMPLE SPAN		BLOCKING "C" 1/3 SPAN OF SIMPLE SPAN		BLOCKING TO INTERIOR PURLIN DETAIL	BLOCKING TO EXTERIOR PURLIN DETAIL	BEAM TO PURLIN DETAIL			
						SECTION	DETAIL	SECTION	DETAIL	SECTION	DETAIL	SECTION	DETAIL			INTERIOR SPLICE	INTERIOR @ CANTILEVER	EXTERIOR SPLICE	EXTERIOR @ CANTILEVER
A	45"	18' - 0"	7' - 5"	10' - 6"	0 psf	C8 x 4 14 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33
B	45"	20' - 0"	7' - 9"	10' - 6"	0 psf	C8 x 4 14 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33
C	45"	27' - 0"	8' - 9"	11' - 2"	0 psf	C8 x 4 12 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33
D	80"	18' - 0"	6' - 9"	8' - 3"	0 psf	C8 x 4 14 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33
E	80"	18' - 0"	7' - 3"	9' - 0"	0 psf	C10 x 4 14 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33
F	80"	20' - 0"	7' - 9"	10' - 3"	0 psf	C8 x 4 12 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33
G	80"	20' - 0"	7' - 3"	9' - 0"	0 psf	C10 x 4 14 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33
H	80"	27' - 0"	8' - 6"	11' - 2"	0 psf	C10 x 4 12 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	C6 x 2.5 x 16 GA	4/S-5	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33
J	45"	18' - 0"	7' - 3"	9' - 3"	20 psf	C8 x 4 14 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33
K	45"	20' - 0"	7' - 3"	9' - 3"	20 psf	C8 x 4 14 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33
L	80"	18' - 0"	7' - 5"	10' - 6"	20 psf	C10 x 4 12 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33
M	80"	20' - 0"	8' - 0"	10' - 6"	20 psf	C10 x 4 12 GA	1/S-5	C6 x 2.5 x 16 GA	4/S-5	C6 x 2.5 x 16 GA	4/S-5	N/A	N/A	7/S-33	8/S-33	1/S-33	12/S-33	2/S-33	13/S-33

1. MULTIPLE STRUCTURE ID'S MAY BE SELECTED WITHIN THE SAME SITE AND/OR STRUCTURE.
2. WHEN UTILIZING A STRUCTURE ID READ FROM WITHIN THAT ID ROW ONLY.
3. BEAM TO PURLIN DETAIL AT SPLICE SHALL NOT OCCUR ON A PURLIN WITH A CANTILEVER SPAN.
4. WHEN THE CANTILEVER SPAN SHOWN ON THE SITE SPECIFIC SHEETS DOES NOT EXCEED THE MAX CANTILEVER SPAN NO BLOCKING, MID SPAN BLOCKING OF THE CANTILEVER IS NOT REQUIRED.
5. PURLIN SPACING MAY BE INCREASED BEYOND THE MAXIMUMS GIVEN IN THE CHART ABOVE AS LONG AS THE TRIBUTARY WIDTH TO THE PURLIN DOES NOT EXCEED PS.
6. LONG PURLIN CANTILEVERS INCREASE THE TRIBUTARY AREA TO THE END BEAM AND MAY REQUIRE THE SUPPORTING MEMBERS TO INCREASE IN SIZE PER THE SCHEDULE BELOW. THE LEFT COLUMN OF THE SCHEDULE REPRESENTS THE COLUMN SPACING CURRENTLY USED, AND THE CENTER COLUMN OF THE SCHEDULE REPRESENTS THE PURLIN CANTILEVER RANGE. USING THE COLUMN SPACING AND PURLIN CANTILEVER ADJACENT TO THE END BEAM, DETERMINE THE APPROPRIATE MEMBER SIZING PER THE RIGHTMOST COLUMN OF THE SCHEDULE. FOR EXAMPLE, SEE 2/–

PURLIN CANTILEVER SCHEDULE		
COLUMN SPACING	MAX CANTILEVER	MEMBER SIZING
18'–0"	CS ≤ 7'–5"	18'–0"
18'–0"	7'–5" < CS ≤ 8'–9"	20'–0"
18'–0"	8'–9" < CS ≤ 13'–2"	27'–0"
20'–0"	CS ≤ 8'–3"	20'–0"
20'–0"	8'–3" < CS ≤ 12'–10"	27'–0"
27'–0"	CS ≤ 11'–2"	27'–0"

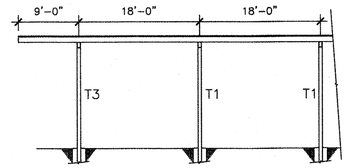
1 | PURLIN SCHEDULE (ALL SLOPES)
SCALE: N/A

EXAMPLE 1:



PURLIN CANTILEVER DOES NOT REQUIRE MEMBER SIZE INCREASE AT END.

EXAMPLE 2:



PURLIN CANTILEVER EXCEEDS LIMITS SHOWN IN CHART AND REQUIRES MEMBER SIZE INCREASE AT END.

2 | PURLIN CONDITION EXAMPLES
SCALE: N.T.S.

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DERRIN K. ROSERAK S 5685 EXP. 06-30-2016 CIVIL STATE OF CALIFORNIA

7/22/15

DATE SIGNED MMMM DD, 2015

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT
A 03 119217
AC ✓ FLS ✓ SS
DATE JUL 31 2015

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES
REVIEWED
APP. P. C. 04-115825
AC ✓ FLS ✓ SS
DATE JUL 29 2015
PCI - CHECK (PC) DOCUMENT CODE: 2013 CBC
SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

MBARC CONSTRUCTION INC.
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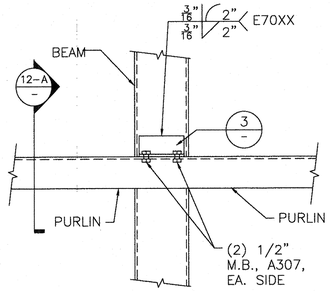
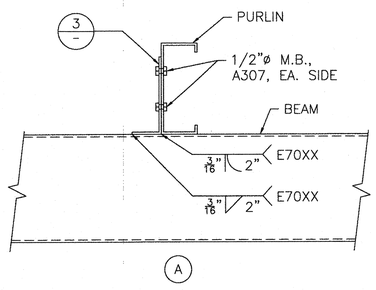
PHOTOVOLTAIC STRUCTURES PURLIN SCHEDULE (ALL SLOPES)

DRAWN MAP
CHECKED DKR
DATE 5/29/15
4STEL JOB NO. 13-1010
SHEET S-32
32 OF 46 SHEETS



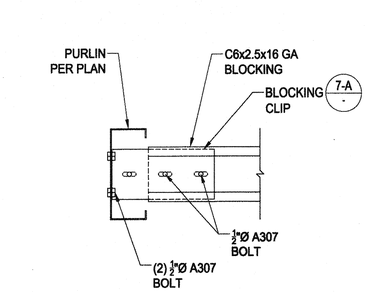
12 BEAM TO PURLIN

SCALE: 1 1/2" = 1'-0"



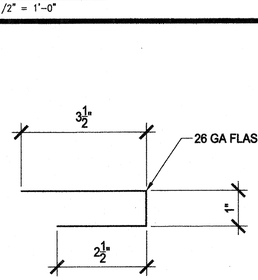
9 DECK FLASHING

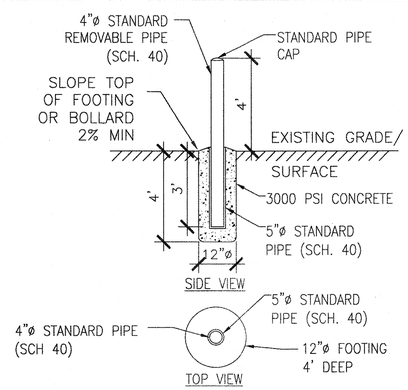
SCALE: 6" = 1'-0"

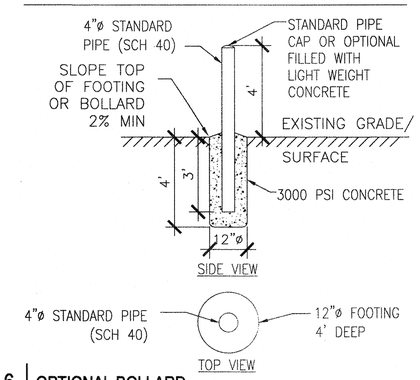


8 PURLIN BLOCKING CONNECTION AT EXTERIOR

SCALE: 1-1/2" = 1'-0"



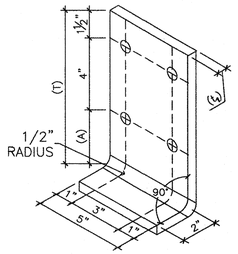




6 OPTIONAL BOLLARD

SCALE: NTS

USE AN ASTM A36 STEEL CLIP WITH DIMENSIONS PER BELOW DETAIL.

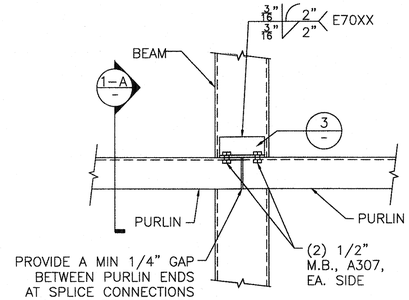


FABRICATION INSTRUCTIONS:
USE A 5" WIDE BY (L) LONG BY (t_1) THICK ASTM A36 STEEL PLATE BENT WITH A 1/2"ø INSIDE RADIUS TO CREATE THE CLIP.

CLIP ANGLE						
PURLIN HEIGHT	T	A	PURLIN SPACING	COLUMN SPACING	GROUND SNOW	t1
8"	7.5"	2"	≤ 45"	≤ 20'-0"	≤ 20 psf	1/4"
8"	7.5"	2"	> 45"	> 20'-0"	≤ 20 psf	5/16"
10"	8.5"	3"	≤ 80"	≤ 20'-0"	0 psf	5/16"
10"	8.5"	3"	≤ 80"	> 20'-0"	0 psf	7/16"
10"	8.5"	3"	≤ 80"	> 20'-0"	≤ 20 psf	3/8"

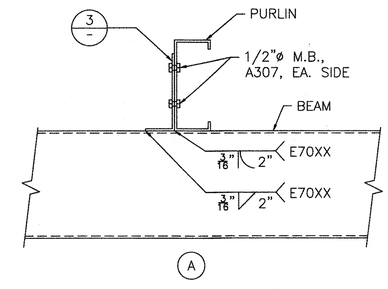
3 CLIP ANGLE

SCALE: 3" = 1'-0"



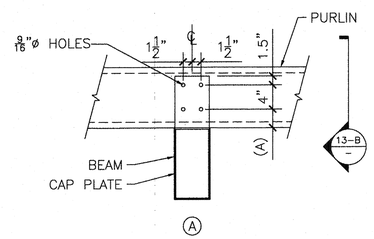
PROVIDE A MIN 1/4" GAP BETWEEN PURLIN ENDS AT SPLICE CONNECTIONS FOR TEMPERATURE EXPANSION AND CONTRACTION

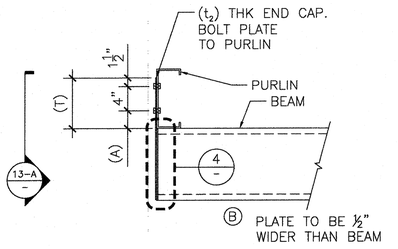
SPLICE CONNECTION AT INTERIOR BEAMS. EXTERIOR BEAMS USE FULL LENGTH PURLIN WITH CANTILEVER. SEE 12/–



1 BEAM TO PURLIN AT SPLICE

SCALE: 1 1/2" = 1'-0"

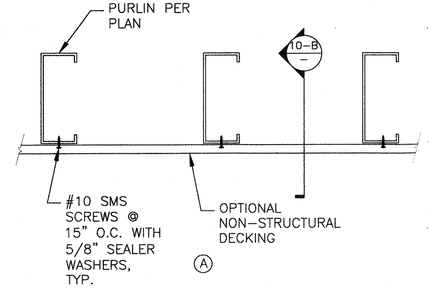


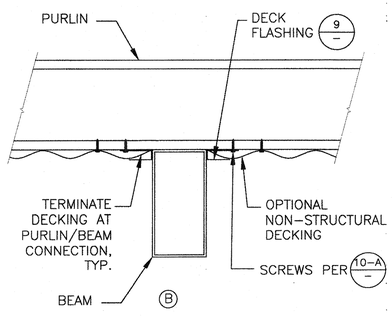


END PLATE						
PURLIN HEIGHT	T	A	PURLIN SPACING	COLUMN SPACING	GROUND SNOW	t2
8"	7.5"	2"	≤ 45"	≤ 20'-0"	≤ 20 psf	1/4"
8"	7.5"	2"	> 45"	> 20'-0"	≤ 20 psf	5/16"
10"	8.5"	3"	≤ 80"	≤ 20'-0"	0 psf	5/16"
10"	8.5"	3"	≤ 80"	> 20'-0"	0 psf	3/8"
10"	8.5"	3"	≤ 80"	> 20'-0"	≤ 20 psf	5/16"

13 BEAM END PLATE

SCALE: 1" = 1'-0"

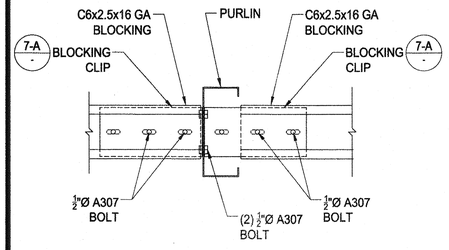


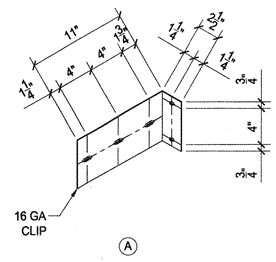


NOTE:
1. SOLAR PANELS NOT SHOWN.
2. PURLIN TO BEAM CONNECTION NOT SHOWN.
3. NON-STRUCTURAL DECKING MAY BE INSTALLED ONLY IF DECKING WEIGHT COMBINED WITH SOLAR SYSTEM WEIGHT AND SPRINKLERS, IF APPLICABLE, IS LESS THAN OR EQUAL TO 3.15 psf.

10 OPTIONAL DECKING

SCALE: 3" = 1'-0"

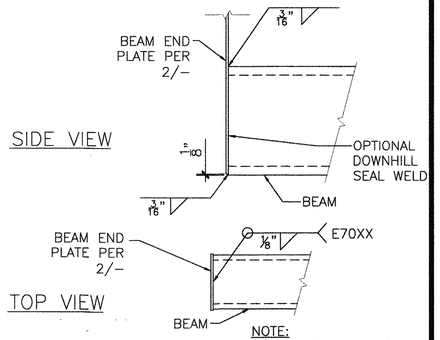




NOTE:
1. BLOCKING SECTIONS SHALL BE 2 3/4" WIDE.
2. SHORT-SLOTTED HOLES OPTIONAL. STANDARD ROUND HOLES MAY BE USED.

7 PURLIN BLOCKING CONNECTION AT INTERIOR

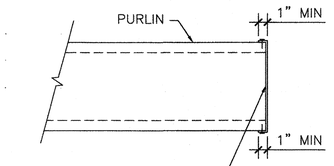
SCALE: 1-1/2" = 1'-0"



NOTE:
TOP & BOTTOM WELDS ARE STRUCTURAL.
SEAL WELDS ON SIDES ARE NOT STRUCTURAL.

4 BEAM TO END PLATE

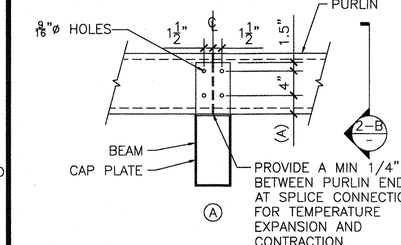
SCALE: 1 1/2" = 1'-0"



20 GA. MIN. GALV. SHEET METAL END CAP TO FIT PURLIN, WITH (2) #10 SHEET METAL SCREWS

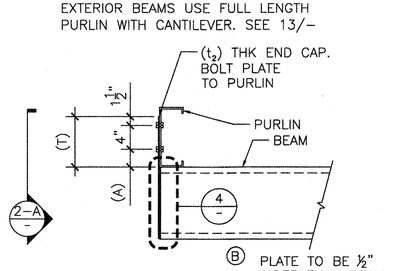
5 PURLIN END CAP

SCALE: 1 1/2" = 1'-0"



PROVIDE A MIN 1/4" GAP BETWEEN PURLIN ENDS AT SPLICE CONNECTIONS FOR TEMPERATURE EXPANSION AND CONTRACTION

SPLICE CONNECTION AT INTERIOR BEAMS. EXTERIOR BEAMS USE FULL LENGTH PURLIN WITH CANTILEVER. SEE 13/–



END PLATE						
PURLIN HEIGHT	T	A	PURLIN SPACING	COLUMN SPACING	GROUND SNOW	t2
8"	7.5"	2"	≤ 45"	≤ 20'-0"	≤ 20 psf	1/4"
8"	7.5"	2"	> 45"	> 20'-0"	≤ 20 psf	5/16"
10"	8.5"	3"	≤ 80"	≤ 20'-0"	0 psf	5/16"
10"	8.5"	3"	≤ 80"	> 20'-0"	0 psf	3/8"
10"	8.5"	3"	≤ 80"	> 20'-0"	≤ 20 psf	5/16"

2 BEAM END PLATE AT SPLICE

SCALE: 1" = 1'-0"

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DERIN K. ROSERAK S 5885 EXP. 06-30-2016 STRUCTURAL

7/22/15

DATE SIGNED MMM DD, 2015

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT
A 03 119217
AC FLS SS
DATE JUL 31 2015

SITE SPECIFIC DSA APPROVAL

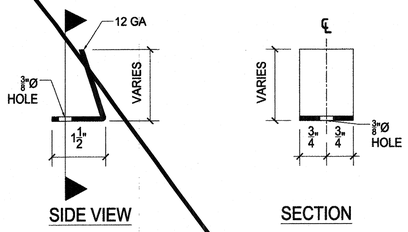
IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES
APP. P. C. 04-119125
RECEIVED
AC FLS SS
DATE JUL 28 2015
DSA - CHECK (PC) DOCUMENT CODE: 2013 CBC
SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

MBARC CONSTRUCTION INC.
674 RANCHEROS DR SAN MARCOS, CA 92069
PHONE: (760) 744-4131 FAX: (760) 744-4449
LIC # 869960 B AND C51

4STEL ENGINEERING
STRUCTURAL ENGINEERING
109 PAST ESCALONES SAN CLEMENTE, CA 92672
PHONE: (949) 388-9333 FAX: (949) 388-3773

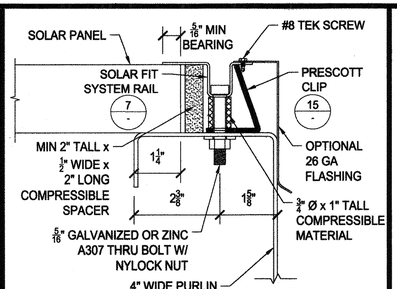
PHOTOVOLTAIC STRUCTURES STANDARD PURLIN DETAILS

DRAWN MAP
CHECKED DKR
DATE 5/29/15
4STEL JOB NO. 13-1010
SHEET S-33
33 OF 46 SHEETS



15 PRESCOTT CLIP

SCALE: 6" = 1'-0"

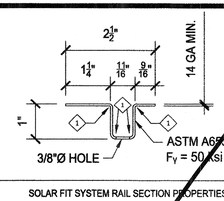


NOTE:
ALL DIMENSIONS SHOWN ARE TYPICAL AND WILL VARY DUE TO SITE SPECIFIC CONDITIONS.

11 SOLAR FIT SYSTEM TOP W/ GAPS

SCALE: 6"=1'-0"

PATENT PENDING



SOLAR FIT SYSTEM RAIL SECTION PROPERTIES						
GAUGE	WT.(plf)	Ae(in²)	Ixe(in⁴)	Sxe(t)(in³)	Sxe(b)(in³)	rx(in)
14	0.97242	0.28601	0.03686	0.10355	0.05724	0.3590

NOTE:

1/8" RADIUS ON SIDE OF STEEL AS SHOWN

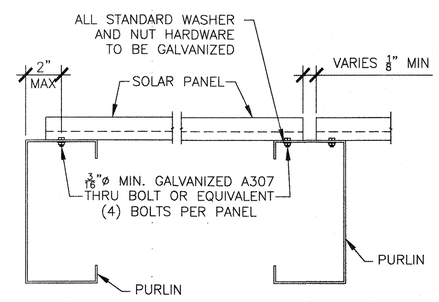
CLIP & SCREW NOTE 8/S-3

7 SOLAR FIT SYSTEM RAIL

SCALE: 6"=1'-0"

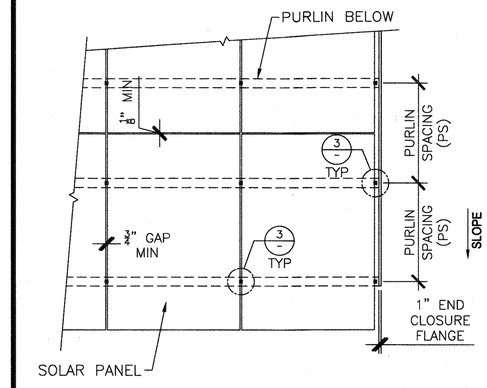
PATENT PENDING

NOTE:
ALL HOLES TO BE 1/16"Ø LARGER THAN BOLTS UTILIZED.
ALL HOLES TO BE FIELD DRILLED NOT SLOTTED.



4 ALTERNATE PANEL ATTACHMENT

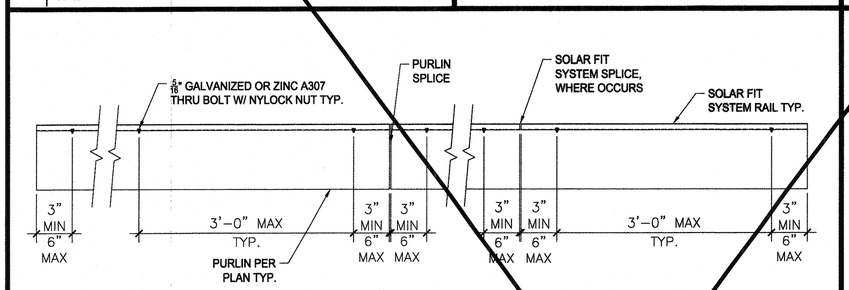
SCALE: 3" = 1'-0"



1 PORTRAIT SOLAR PANEL LAYOUT

SCALE: 3/8" = 1'-0"

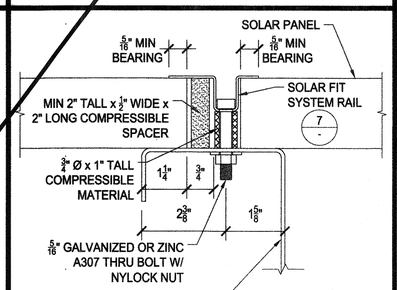
NOTE:
SEE S-36 FOR WEEB GROUNDING DETAILS.



6 SOLAR FIT SYSTEM ELEVATION VIEW

SCALE: 1"=1'-0"

PATENT PENDING



NOTE:
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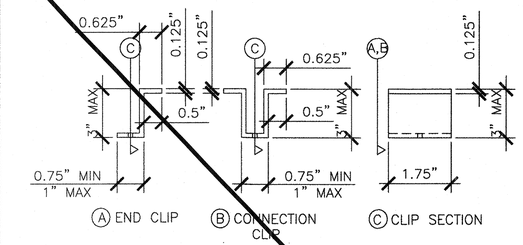
8 SOLAR FIT SYSTEM INTERIOR W/ C-CHANNEL FACING DOWN HILL

SCALE: 6"=1'-0"

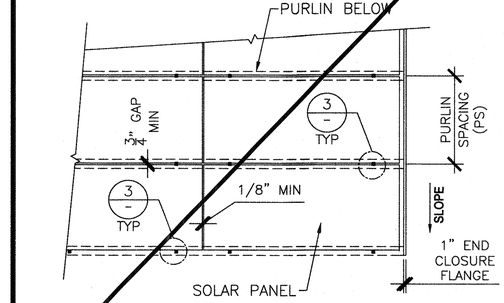
PATENT PENDING



NOTES:
1. SHOP DRAWING FOR CLIP TO BE REVIEWED BY THE SITE SPECIFIC DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE. SEE GENERAL NOTE 8 ON S-3.
2. 5052 ALUMINUM CLIPS x 0.125 THICKNESS, CLEAR ANODIZED.
3. NON-WELDED CLIPS
4. iFORCE BUILDING PRODUCTS SHALL BE SOLE SOURCE PROVIDER FOR SOLAR PANEL CLIP AND ATTACHMENT HARDWARE.

5 12 GA PURLIN SOLAR PANEL CLIP

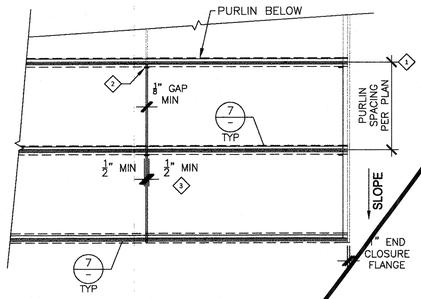
SCALE: 6" = 1'-0"



2 LANDSCAPE SOLAR PANEL LAYOUT

SCALE: 3/8" = 1'-0"

NOTE:
SEE S-36 FOR WEEB GROUNDING DETAILS.



NOTE:

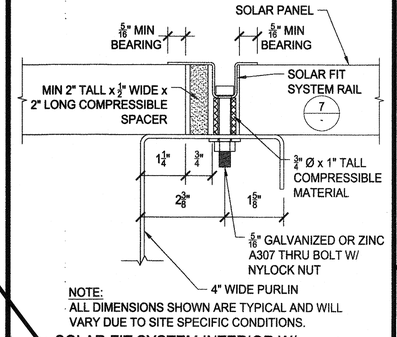
1 PANELS MAY BE IN PORTRAIT OR LANDSCAPE BASED ON SITE SPECIFIC PURLIN SPACING.

2 MIN 2" TALL x 1/2" WIDE x 2" LONG COMPRESSIBLE SPACER LOCATED UNDER LONG LEG OF SOLAR FIT RAIL .

3 WHEN PANEL GAP EXCEEDS 3/4" THE MIN 2" LENGTH OF COMPRESSIBLE SPACER SHALL BE INCREASED TO ACHIEVE THE MIN 1/2" CONTACT LENGTH OF EACH PANEL. ALTERNATIVELY, (2) SPACERS MAY BE USED, ONE FOR EACH PANEL.

13 SOLAR PANEL LAYOUT

SCALE: 3/8" = 1'-0"

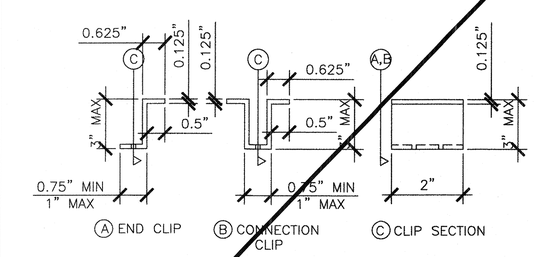


NOTE:
ALL DIMENSIONS SHOWN ARE TYPICAL AND WILL VARY DUE TO SITE SPECIFIC CONDITIONS.

9 SOLAR FIT SYSTEM INTERIOR W/ C-CHANNEL FACING UP HILL

SCALE: 6"=1'-0"

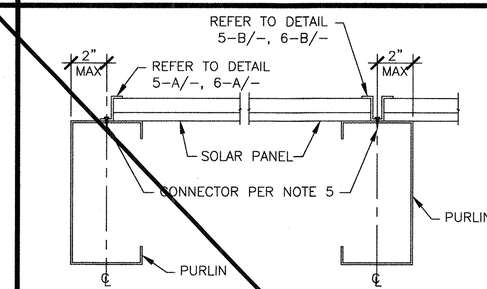
PATENT PENDING



NOTES:
1. SHOP DRAWING FOR CLIP TO BE REVIEWED BY THE SITE SPECIFIC DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE. SEE GENERAL NOTE 8 ON S-3.
2. 5052 ALUMINUM CLIPS x 0.125 THICKNESS, CLEAR ANODIZED.
3. NON-WELDED CLIPS
4. iFORCE BUILDING PRODUCTS SHALL BE SOLE SOURCE PROVIDER FOR SOLAR PANEL CLIP AND ATTACHMENT HARDWARE.

6 14 GA PURLIN SOLAR PANEL CLIP

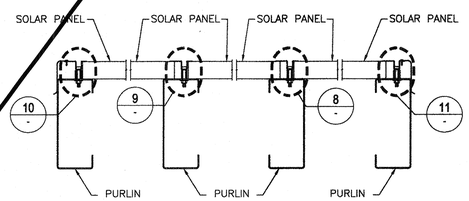
SCALE: 6" = 1'-0"



NOTES:
1. FOR ALTERNATE PANEL ATTACHMENT REFER TO DETAIL 4/-.
2. APPROVED SHOP DRAWING REQUIRED PRIOR TO MANUFACTURING SOLAR PANEL CLIP & FOR SCREW.
3. MAXIMUM TRIBUTARY AREA FOR "Z" CLIP 12 SQ FT.
4. MAXIMUM TRIBUTARY AREA FOR "U" CLIP 12 SQ FT.
5. THE CONNECTOR MAY BE EITHER A SCREW OR BOLT. IF A SCREW IS SELECTED USE A #12 ITW BUILDEX TEKS SELECT SCREW OR DRIL-FLEX SCREW. IN EACH HOLE. INSTALLED PER iFORCE CLIP AND SCREW NOTES 1-8 ON SHEET S-3. IF A BOLT IS USED 3/16"Ø GALVANIZED A307 THRU BOLT OR EQUIVALENT. ONE BOLT IN EACH HOLE.

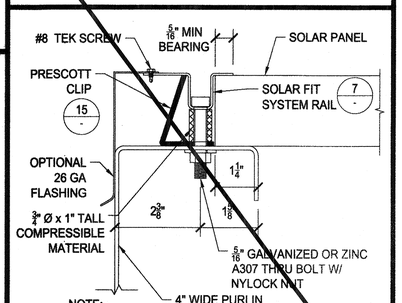
3 PANEL ATTACHMENT

SCALE: 3" = 1'-0"



14 PANEL ATTACHMENT

SCALE: 1-1/2" = 1'-0"



NOTE:
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10 SOLAR FIT SYSTEM BOTTOM W/ GAPS

SCALE: 6"=1'-0"

PATENT PENDING

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DERRICK K. ROSOFSKY S 5885 EXP. 06-30-2016 CIVIL STATE OF CALIFORNIA

7/22/15

DATE SIGNED
MMMM DD, 2015

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DATE JUL 31 2015

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APP. P. C. 04-111025
REVIEWED
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MBARC CONSTRUCTION INC.
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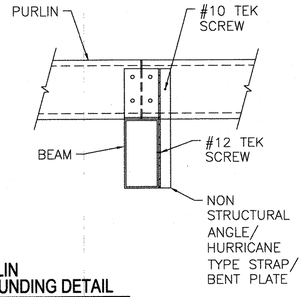
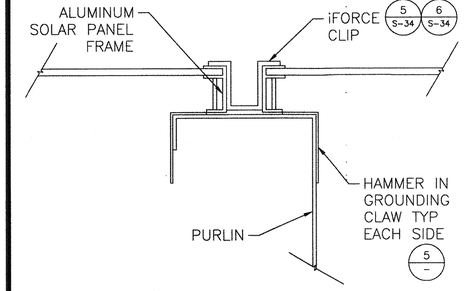
PHOTOVOLTAIC STRUCTURES STANDARD SOLAR PANEL SUPPORT DETAILS

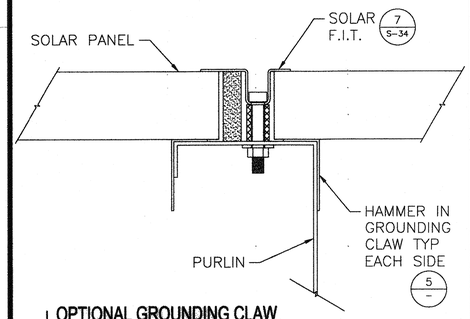
DRAWN MAP
CHECKED DKR
DATE 5/29/15
4STEL JOB NO. 13-1010
SHEET S-34
34 OF 46 SHEETS



9 PURLIN GROUNDING DETAIL

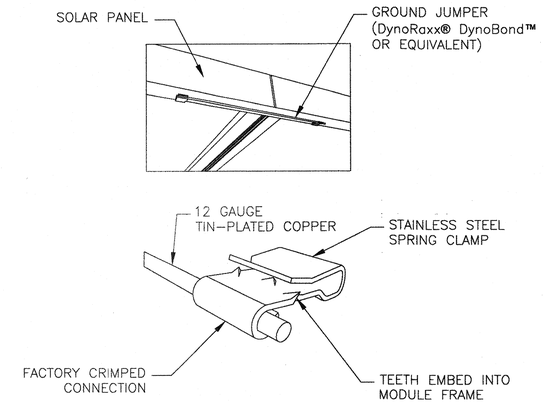
SCALE: N.T.S.



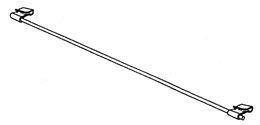


6 OPTIONAL GROUNDING CLAW MOUNTING MEMBER

SCALE: 6" = 1'-0"



GROUND JUMPER (DynoRaxx® DynoBond™ OR EQUIVALENT) INSTALLATION

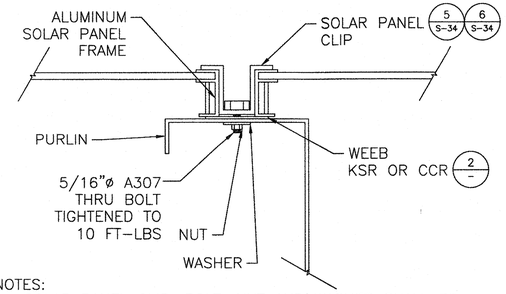


NOTE:
TO BE USED AS A JUMPER BETWEEN MODULES AND ROWS WHICH MAKES THE MODULE FRAME THE MEDIUM FOR THE EQUIPMENT GROUND PATH.

GROUND JUMPER (DynoRaxx® DynoBond™ OR EQUIVALENT)

3 OPTIONAL GROUND JUMPER

SCALE: N.T.S.

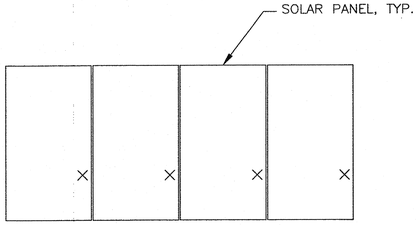


NOTES:
1. SOLAR PANEL CLIP, BOLT, NUT AND WASHER SHALL BE SUPPLIED BY iFORCE BUILDING PRODUCTS – NO OTHER SUPPLIER IS ALLOWED.
2. WEEB – KSR OR CCR MAY BE SUPPLIED BY iFORCE BUILDING PRODUCTS OR OTHER VENDER.
3. WHEN WEEB KSR OR CCR IS UTILIZED ALL SOLAR PANEL CLIPS MUST BE INSTALLED WITH A BOLT NOT A SCREW.
4. BOLT, NUT AND WASHER SHALL BE CORROSION RESISTANT VIA ZINC OR GALVANIZED OR STAINLESS STEEL.
5. INSTALLATION OF BOLT REQUIRES NO TOOL ON THE BOLT HEAD; ALL TORQUE APPLIED TO NUT.

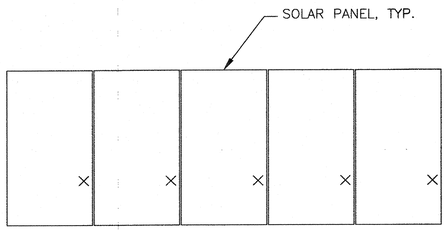
NOTE:
iFORCE CLIP ONLY. DOES NOT APPLY TO SOLAR F.I.T. ~~OR POWERS PURLIN~~

1 OPTIONAL WEEB CLIP MOUNTING MEMBER

SCALE: 6" = 1'-0"



EVEN NUMBER OF MODULES IN ROW

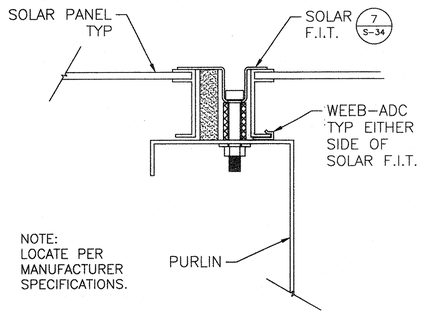


ODD NUMBER OF MODULES IN ROW

NOTE:
X DENOTES WEEB-ADC LOCATION

10 OPTIONAL WEEB-ADC LAYOUT

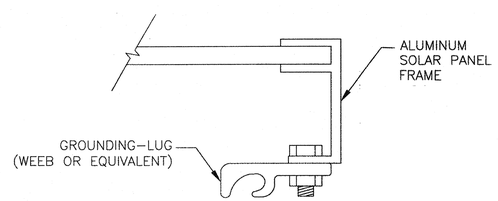
SCALE: 3/8" = 1'-0"



NOTE:
LOCATE PER MANUFACTURER SPECIFICATIONS.

7 WEEB-ADC OPTIONAL GROUNDING DETAIL

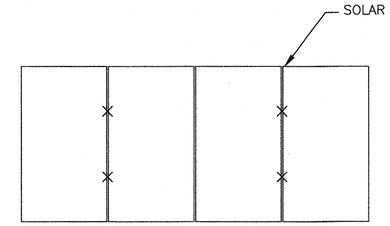
SCALE: N.T.S.



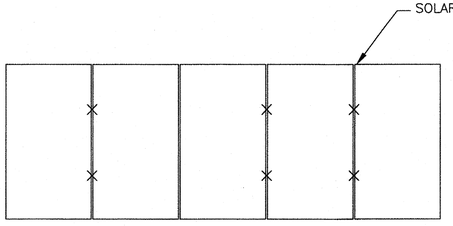
GROUNDING LUG

4 OPTIONAL GROUNDING LUG

SCALE: 6" = 1'-0"



EVEN NUMBER OF MODULES IN ROW

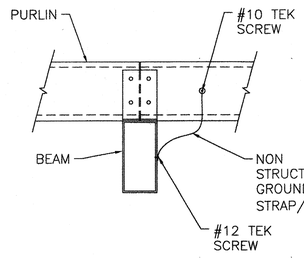


ODD NUMBER OF MODULES IN ROW

NOTE:
X DENOTES WEEB-KSR OR CCR LOCATION

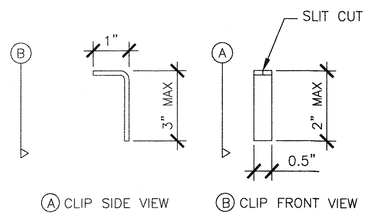
2 OPTIONAL WEEB-KSR OR CCR LAYOUT

SCALE: 3/8" = 1'-0"



8 PURLIN GROUNDING DETAIL

SCALE: N.T.S.



MINIMUM 28 GA ASTM A653
GALVANIZED MATERIAL

5 OPTIONAL 28 GA GROUNDING CLAW

SCALE: 6" = 1'-0"

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K ROBERTSON S 5885 EXP. 06-30-2016 STRUCTURAL CIVIL

7/22/15

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PHOTOVOLTAIC STRUCTURES OPTIONAL GROUNDING DETAILS

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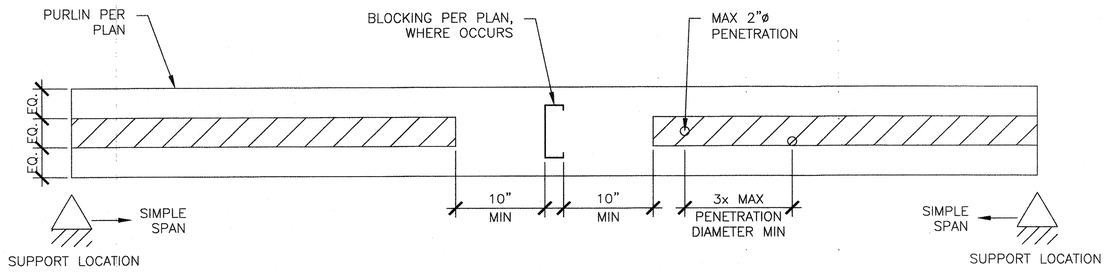
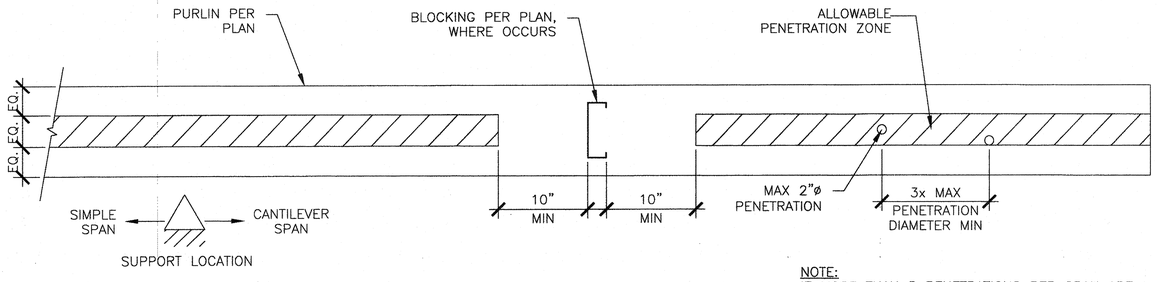
36 OF 46 SHEETS



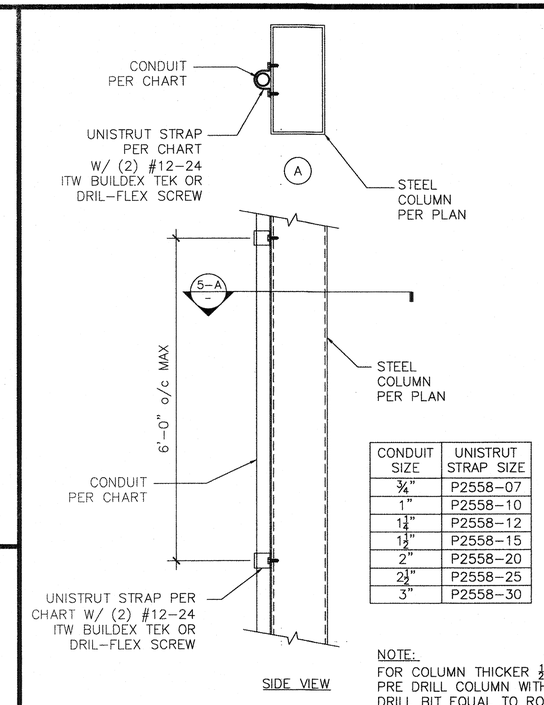
NOTE:
IF MORE THAN 5 PENETRATIONS PER SPAN ARE NEEDED, CONTRACTOR TO SUBMIT AN RFI TO DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE TO ENSURE REQUIREMENTS OF THIS DETAIL ARE MET; AND TO JUSTIFY THE QUANTITY OF PENETRATIONS NEEDED.

7 | ALLOWABLE PURLIN PENETRATION SIMPLE SPAN
SCALE: NTS



NOTE:
IF MORE THAN 5 PENETRATIONS PER SPAN ARE NEEDED, CONTRACTOR TO SUBMIT AN RFI TO DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE TO ENSURE REQUIREMENTS OF THIS DETAIL ARE MET; AND TO JUSTIFY THE QUANTITY OF PENETRATIONS NEEDED.

8 | ALLOWABLE PURLIN PENETRATION CANTILEVER SPAN
SCALE: NTS

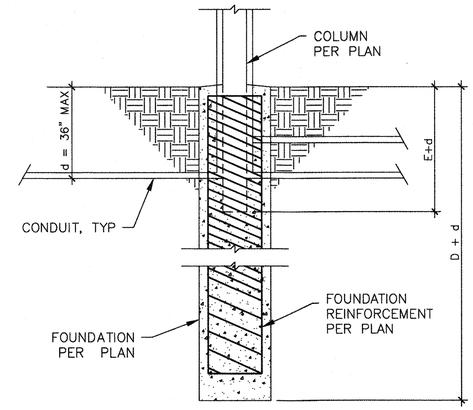


SIDE VIEW

CONDUIT SIZE	UNISTRUT STRAP SIZE
¾"	P2558-07
1"	P2558-10
1¼"	P2558-12
1½"	P2558-15
2"	P2558-20
2½"	P2558-25
3"	P2558-30

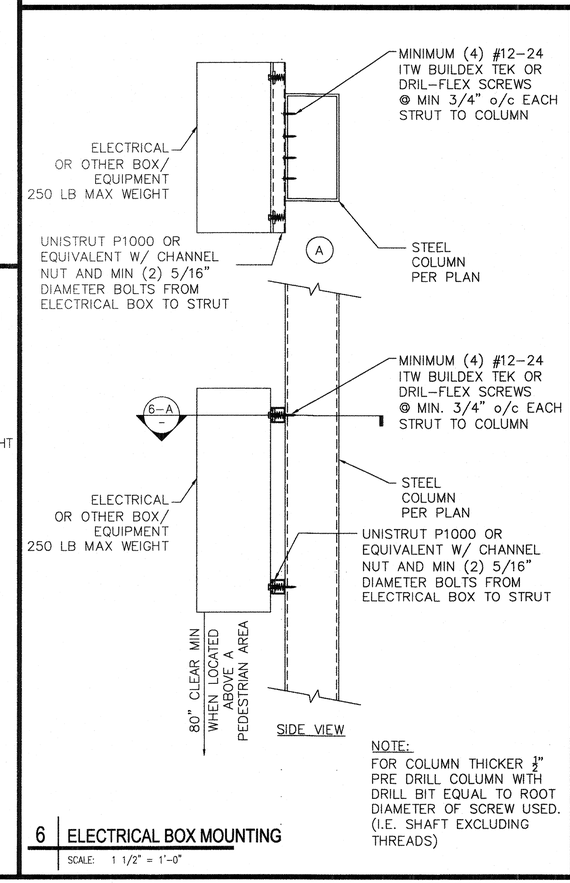
NOTE:
FOR COLUMN THICKER ½" PRE DRILL COLUMN WITH DRILL BIT EQUAL TO ROOT DIAMETER OF SCREW USED. (I.E. SHAFT EXCLUDING THREADS)

5 | PIPE/CONDUIT MOUNTING
SCALE: 1 1/2" = 1'-0"



NOTE:
WHEN CONDUIT IS PRESENT, FOUNDATION DEPTH PER PLAN, D, SHALL BE INCREASED BY THE MAXIMUM CONDUIT DEPTH, d AND COLUMN EMBEDMENT, E, SHALL BE INCREASED BY MAX CONDUIT DEPTH, d.

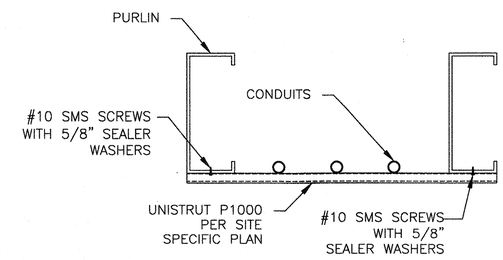
1 | CONDUIT OR PIPE THROUGH FOOTING
SCALE: 1" = 1'-0"



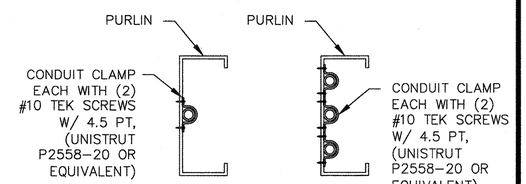
SIDE VIEW

NOTE:
FOR COLUMN THICKER ½" PRE DRILL COLUMN WITH DRILL BIT EQUAL TO ROOT DIAMETER OF SCREW USED. (I.E. SHAFT EXCLUDING THREADS)

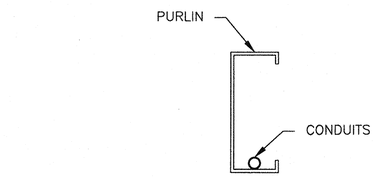
6 | ELECTRICAL BOX MOUNTING
SCALE: 1 1/2" = 1'-0"



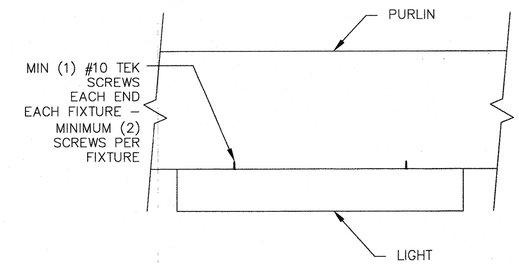
2 | OPTIONAL CONDUIT SUPPORT 1
SCALE: 1" = 1'-0"



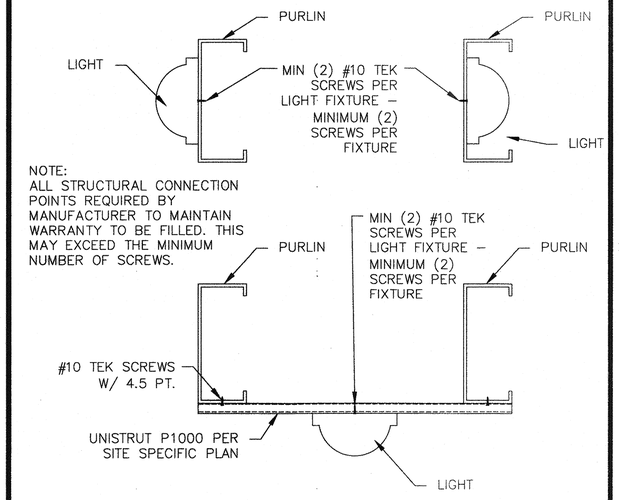
3 | OPTIONAL CONDUIT SUPPORT 2
SCALE: 1" = 1'-0"



4 | OPTIONAL CONDUIT LOCATION 3
SCALE: 1" = 1'-0"



10 | ALTERNATE LIGHT INSTALLATION OPTIONS
SCALE: 1" = 1'-0"



9 | LIGHT INSTALLATION OPTIONS
SCALE: 1" = 1'-0"

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DERIAN K. ROSERINK S 5685 EXP. 06-30-2016 STATE OF CALIFORNIA

7/22/15
DATE SIGNED
MMMM DD, 2015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
A 03 119217
AC ✓ FLS ✓ SS
DATE JUL 31 2018

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
REVISED
APP. P. C. 04-111825
AC ✓ FLS ✓ SS ✓
DATE JUL 2 2015
DSA - CHECK (PC) DOCUMENT
CODE: 2013 CBC
A SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

MBARC CONSTRUCTION INC.
LIC # 869960
B AND C51
674 RANCHEROS DR
SAN MARCOS, CA
92069
PHONE: (760) 744-4131
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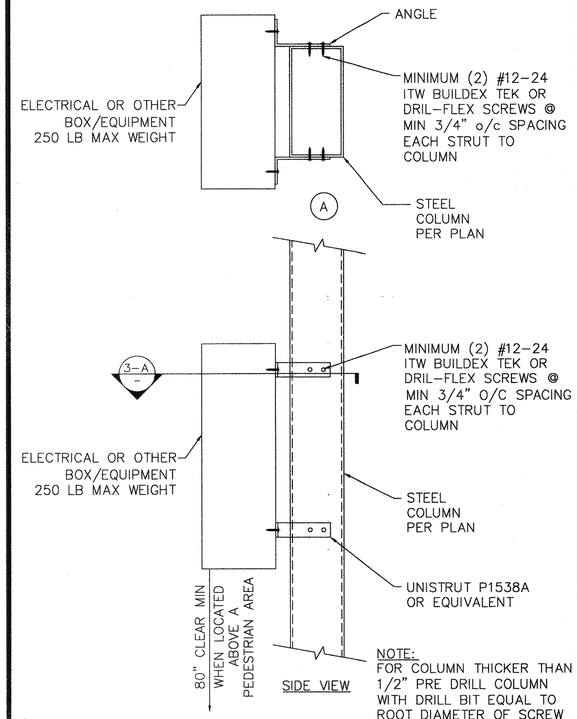
4STEL ENGINEERING
STRUCTURAL ENGINEERING
109 EAST ESCALONES
SAN CLEMENTE, CA 92672
PHONE: (949) 388-9333
FAX: (949) 388-3773

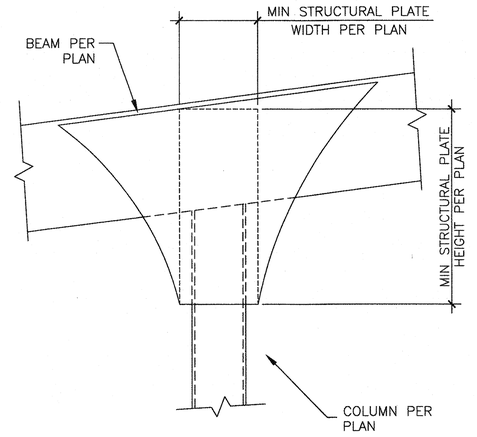
PHOTOVOLTAIC STRUCTURES STANDARD ELECTRICAL DETAILS

DRAWN MAP
CHECKED DKR
DATE 5/29/15
4STEL JOB NO. 13-1010
SHEET S-37
37 OF 46 SHEETS



3 ALTERNATE EQUIPMENT ATTACHMENT DETAIL

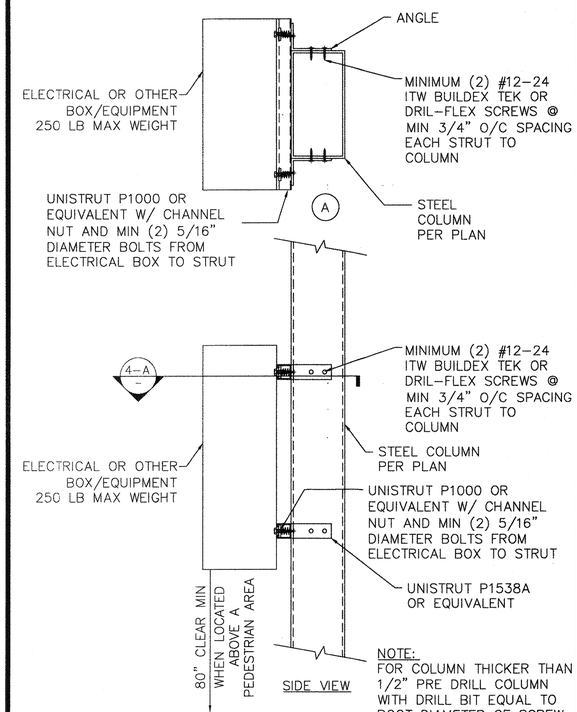
SCALE: 1 1/2" = 1'-0"



NOTE:
SIZE OF PLATES & WELDS SHALL MEET OR EXCEED THE THICKNESS AND DIMENSIONS SHOWN ON S-12, S-18, S-18.6, S-25, S-31 OR S-31.6

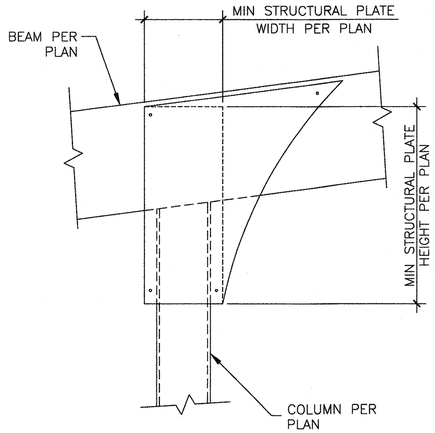
1 ALTERNATE BEAM TO COLUMN

SCALE: 1-1/2" = 1'-0"



4 ALTERNATE EQUIPMENT ATTACHMENT DETAIL

SCALE: 1 1/2" = 1'-0"



NOTE:
SIZE OF PLATES & WELDS SHALL MEET OR EXCEED THE THICKNESS AND DIMENSIONS SHOWN ON S-12, S-18, S-18.6, S-25, S-31 OR S-31.6

2 ALTERNATE BEAM TO COLUMN

SCALE: 1-1/2" = 1'-0"

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN K. ROSENAK S 5885 EXP. 06-30-2016 STRUCTURAL

7/22/15

DATE SIGNED MMMM DD, 2015

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT

A 03 119217

AC FLS SS

DATE JUL 31 2018

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT OFFICE OF REGULATION SERVICES

APP. P. C. 04-115125

AC FLS SS

DATE JUL 29 2015

PLAN CHECK (PC) DOCUMENT CODE 2013 CBC SEPARATE PROJECT APPLICATION FOR CONSTRUCTION IS REQUIRED

MBARC CONSTRUCTION INC.
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PHOTOVOLTAIC STRUCTURES ALTERNATE CONNECTION DETAILS

DRAWN MAP
CHECKED DKR
DATE 5/29/15
4STEL JOB NO. 13-1010
SHEET S-37.1
37.1 OF 46 SHEETS

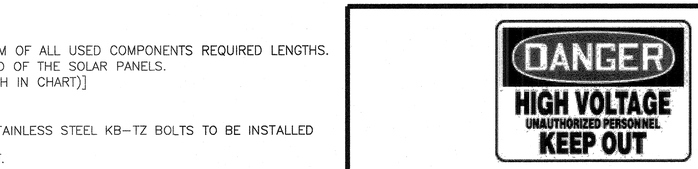
ELECTRICAL EQUIPMENT ANCHORAGE AND PAD SIZES

EQUIPMENT SCHEDULE

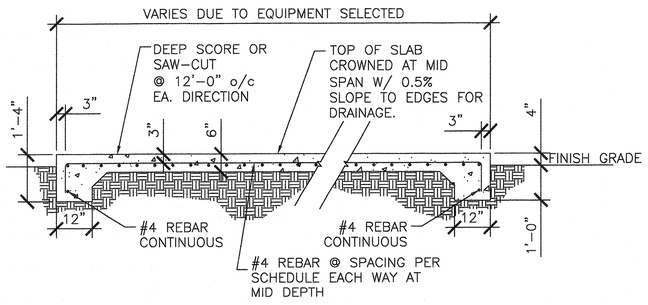
DESIGNATION	DESCRIPTION	DIMENSIONS (LENGTH x WIDTH x HEIGHT)	WEIGHT (LBS.)	DESIGNATION	ANCHORAGE	DETAIL	MINIMUM PAD SIZE & REINFORCEMENT
1	INVERTER–1	75" x 31" x 80"	2977	150KW	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 51"X19" MIN PATTERN	6/–	7'–3" LONG BY 5'–0" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH
2	INVERTER–2	117.7" x 43.3" x 92.6"	4500	250KW	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 93.7"X31.3" MIN PATTERN	6/–	11'–3" LONG BY 6'–6" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH
3	INVERTER–3	106.33" x 39.59" x 89.18"	3300	375KW	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 82.33"X27.59" MIN PATTERN	6/–	10'–6" LONG BY 6'–0" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH
4	INVERTER–4	138.75" x 42.47" x 93.47"	5900	500KW	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 114.75"X30.47" MIN PATTERN	6/–	13'–0" LONG BY 7'–0" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH
5	INVERTER–5	148" x 84" x 107"	12000	1MW	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 124"X72" MIN PATTERN	6/–	14'–0" LONG BY 9'–0" WIDE BY 6" THICK SLAB W/ #4 BARS @ 8" o/c AT MID DEPTH
6	TRANSFORMER–1	49" x 30.5" x 77"	2500	250TRANS	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 25"X18.5" MIN PATTERN	6/–	6'–6" LONG BY 5'–9" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH
7	TRANSFORMER–2	49" x 30.5" x 77"	3200	500TRANS	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 25"X18.5" MIN PATTERN	6/–	6'–6" LONG BY 6'–6" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH
8	TRANSFORMER–3	96" x 77" x 96"	17600	3750KVA	(6) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT. TWO ROWS OF 3 BOLTS. ROWS SPACED 71" MIN APART W/ BOLTS EQUALLY SPACED IN EA. ROW	6/–	10'–3" LONG BY 10'–3" WIDE BY 6" THICK SLAB W/ #4 BARS @ 6" o/c AT MID DEPTH
9	TRANSFORMER–4	94" x 74" x 72.5"	12500	1500KVA	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–3/4" EMBEDMENT IN A 70"X62" MIN PATTERN	6/–	9'–3" LONG BY 8'–0" WIDE BY 6" THICK SLAB W/ #4 BARS @ 9" o/c AT MID DEPTH
10	HVL SWITCH	60" x 38" x 97.7"	1300	HVL	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 36"X24" MIN PATTERN	6/–	6'–6" LONG BY 5'–3" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH
11	54" WIDE SWITCHBOARD COMPONENT	96" x 54" x 91.5" (MAX) 54" x 54" x 91.5" (MIN)	2400	54SB	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 30"X30" MIN PATTERN	6/–	6'–6" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH LENGTH IS EQUAL TO COMPONENT LENGTH (6'–6" MIN, 8'–0" MAX)
12	48" WIDE SWITCHBOARD COMPONENT	96" x 48" x 91.5" (MAX) 48" x 48" x 91.5" (MIN)	1700	48SB	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 24"X24" MIN PATTERN	6/–	6'–0" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH LENGTH IS EQUAL TO COMPONENT LENGTH (6'–0" MIN, 8'–0" MAX)
13	42" WIDE SWITCHBOARD COMPONENT	96" x 42" x 91.5" (MAX) 42" x 42" x 91.5" (MIN)	2200	42SB	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 18"X18" MIN PATTERN	6/–	6'–0" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH LENGTH IS EQUAL TO COMPONENT LENGTH (6'–0" MIN, 8'–0" MAX)
14	24" WIDE SWITCHBOARD COMPONENT	96" x 24" x 91.5" (MAX) 24" x 24" x 91.5" (MIN)	1000	24SB	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 18"X18" MIN PATTERN	6/–	5'–3" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH LENGTH IS EQUAL TO COMPONENT LENGTH (5'–3" MIN, 8'–0" MAX)
15	22" WIDE SWITCHBOARD COMPONENT	96" x 22" x 91.5" (MAX) 22" x 22" x 91.5" (MIN)	1970	22SB	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 16"X16" MIN PATTERN	6/–	6'–0" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH LENGTH IS EQUAL TO COMPONENT LENGTH (6'–0" MIN, 8'–0" MAX)
16	30" WIDE SWITCHBOARD COMPONENT	96" x 30" x 91.5" (MAX) 30" x 30" x 91.5" (MIN)	2020	30SB	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 25"X25" MIN PATTERN	6/–	6'–3" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH LENGTH IS EQUAL TO COMPONENT LENGTH (6'–3" MIN, 8'–0" MAX)
17	36" WIDE SWITCHBOARD COMPONENT.	96" x 36" x 91.5" (MAX) 36" x 36" x 91.5" (MIN)	2070	36SB	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 31"X31" MIN PATTERN	6/–	6'–3" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH LENGTH IS EQUAL TO COMPONENT LENGTH (6'–3" MIN, 8'–0" MAX)
18	SWITCHBOARD	72" x 43" x 90"	1450	800ASB	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 48"X31" MIN PATTERN	6/–	7–6" LONG BY 5'–0" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH
19	FREE STANDING RACK–1	SEE S–39	1500/ BAY	UNISTRUT BRACED RACK	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 30"X46.5" MIN PATTERN	6/–	RACK LENGTH PLUS 12" BY 5'–0" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH
20	FREE STANDING RACK–2	SEE S–40	2000/ BAY	RACK	(4) – 3/4"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 4" EMBEDMENT IN A 9"X9" MIN PATTERN. PER COLUMN. BASE PLATE PER PLAN	6/–	RACK LENGTH PLUS 18" BY 3'–6" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH
21	FREE STANDING RACK–3	SEE S–41	495/ BAY	UNISTRUT RACK	(4) – 1/2"ø HILTI STAINLESS STEEL KB–TZ BOLTS PER ICC ESR–1917 W/ 3–1/4" EMBEDMENT IN A 9"X9" MIN PATTERN	6/–	RACK LENGTH PLUS 24" BY 4'–0" WIDE BY 6" THICK SLAB W/ #4 BARS @ 12" o/c AT MID DEPTH

NOTES:
1) EQUIPMENT MAY BE INSTALLED ON A SINGLE PAD AS LONG AS EACH PIECE OF EQUIPMENT HAS THE REQUIRED PAD SIZE WITHOUT OTHER EQUIPMENT'S PAD REQUIREMENTS OVERLAPPING.
2) POST WARNING SIGNS PER DETAIL 4/S–38 REQUIRED AT ALL ENTRY POINTS TO PAD LOCATION. ALSO SEE SITE SPECIFIC ELECTRICAL PLANS FOR ADDITIONAL SIGNAGE REQUIREMENTS.
3) WHEN SWITCHBOARD COMPONENTS ARE ATTACHED TOGETHER THE PAD SIZE MUST BE THE MAXIMUM PAD WIDTH FOR ANY OF THE INDIVIDUAL COMPONENTS AND THE LENGTH MUST BE EQUIVALENT TO THE SUM OF ALL USED COMPONENTS REQUIRED LENGTHS.
4) NOT ALL EQUIPMENT NEEDS TO BE USED. ELECTRICAL ENGINEER TO SPECIFY SITE SPECIFIC EQUIPMENT TO BE USED AND TO PROVIDE ELECTRICAL DOCUMENTS DEMONSTRATING GROUNDING OF EQUIPMENT AND OF THE SOLAR PANELS.
5) IF OTHER EQUIPMENT IS SUBSTITUTED THE PAD SIZE MAY BE ADJUSTED BY RATIONAL PROPORTIONS [EX:(ACTUAL PAD WIDTH)=(WIDTH OF ACTUAL EQUIPMENT)/(WIDTH OF EQUIPMENT IN THE CHART)*(PAD WIDTH IN CHART)]
6) SITE SPECIFIC DESIGN FOR THE DUCT BANK LOCATIONS SHALL TAKE INTO CONSIDERATION POSSIBLE FENCE POST FOUNDATIONS AND/OR THE IMPACTS OF THE SLAB PERIMETER FOUNDATION.
7) ALL STRUCTURAL CONNECTION POINTS REQUIRED BY MANUFACTURER TO MAINTAIN WARRANTY TO BE FILLED. THIS MAY EXCEED THE MINIMUM NUMBER OF BOLTS INDICATED IN THE ABOVE CHART.
8) ALL ½" ø HILTI STAINLESS STEEL KB–TZ BOLTS TO BE INSTALLED TO 40 FT–LB OF TORQUE. ALL ⅝" ø HILTI STAINLESS STEEL KB–TZ BOLTS TO BE INSTALLED TO 60 FT–LB OF TORQUE. ALL ¾" ø HILTI STAINLESS STEEL KB–TZ BOLTS TO BE INSTALLED TO 110 FT–LB OF TORQUE.
9) MINIMUM EDGE DISTANCE FOR ALL ø HILTI STAINLESS STEEL KB–TZ BOLTS TO BE 6" U.N.O. THE MINIMUM PAD SIZE SHOWN IN CHART MAY NEED TO INCREASE TO ACCOMMODATE THIS MINIMUM REQUIREMENT.
10) IF CHAIN LINK FENCE ENCLOSURE IS USED SEE S–43 FOR CONNECTION OPTIONS WHICH MAY REQUIRE A WIDER PERIMETER FOOTING.

1 EQUIPMENT PAD SCHEDULE
SCALE: N/A

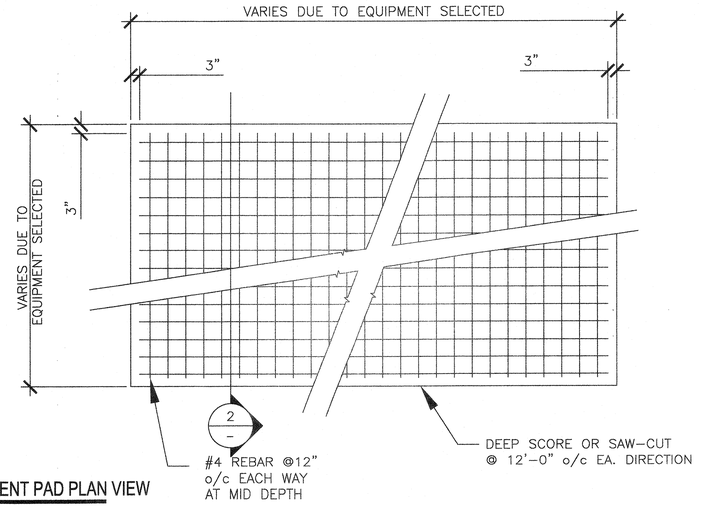


4 WARNING SIGN
SCALE: N/A

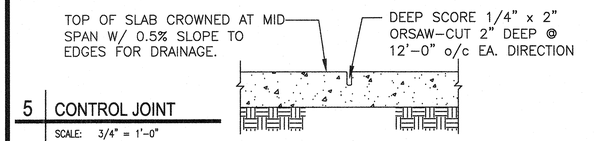


NOTES:
1) IF CHAIN LINK FENCE ENCLOSURE IS USED SEE S–43 FOR CONNECTION OPTIONS WHICH MAY REQUIRE A WIDER PERIMETER FOOTING.

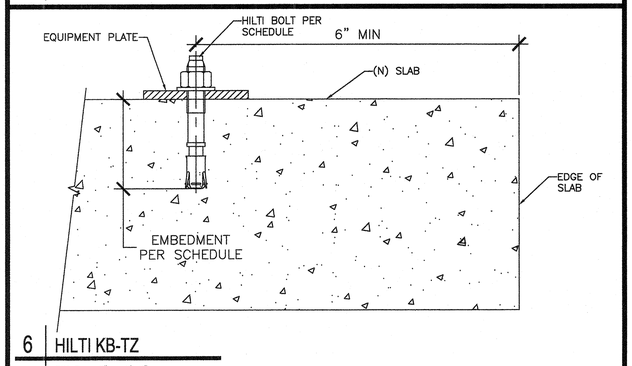
2 EQUIPMENT PAD SECTION
SCALE: 1/2" = 1'–0"



3 EQUIPMENT PAD PLAN VIEW
SCALE: 1/2" = 1'–0"



5 CONTROL JOINT
SCALE: 3/4" = 1'–0"



6 HILTI KB–TZ
SCALE: 6" = 1'–0"

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER
DUSTIN K. ROSSEN
S 5885
EXP. 06-30-15
ELECTRICAL
STATE OF CALIFORNIA

DATE SIGNED
JUNE 25, 2014

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC FLS SS EY
Date JUL 3 1 2014

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP. P. C. 04-114125
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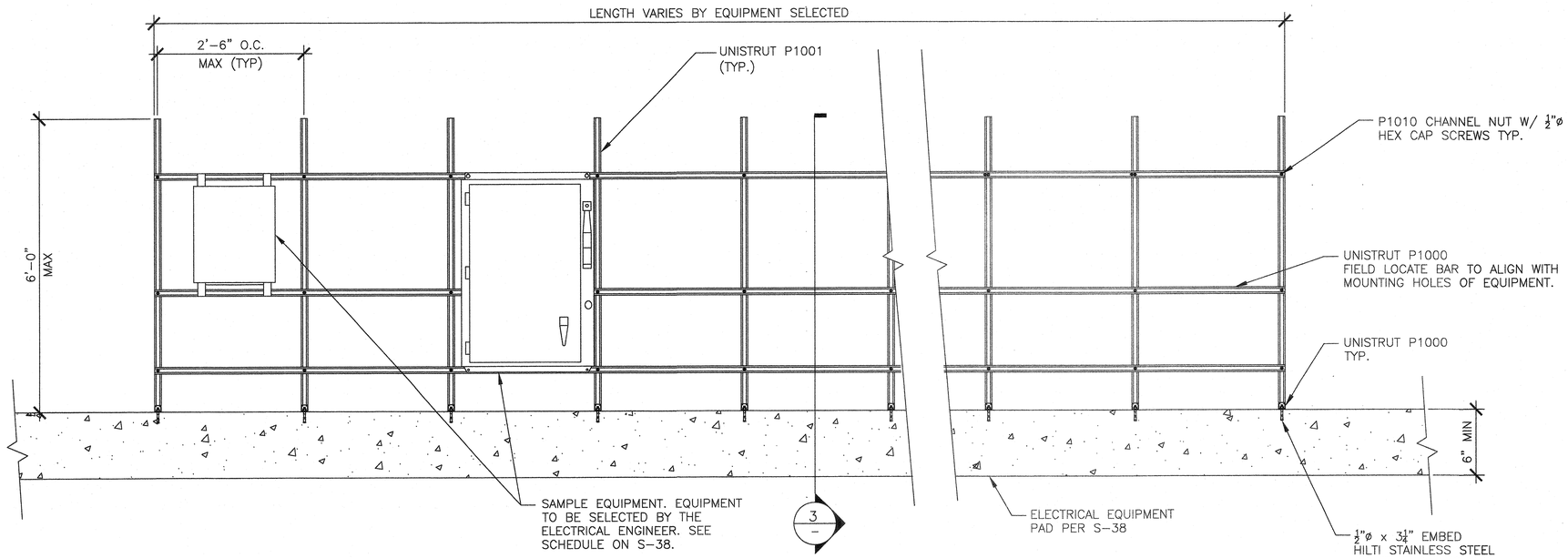
PHOTOVOLTAIC STRUCTURES
EQUIPMENT PAD

DRAWN MAP
CHECKED DKR
DATE 6/25/14
4STEL JOB NO. 13-1010
SHEET S-38
38 OF 45 SHEETS

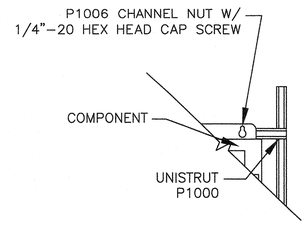
NOTES:

1) ALL STEEL TO BE GALVANIZED OR PAINTED PER STEEL NOTE 12 ON S-3
2) ALL STEEL TO MEET WITH STEEL NOTES PER S-3
3) SEE DETAIL 4/– FOR CONNECTIONS
4) MAXIMUM EQUIPMENT WEIGHT PER BAY GIVEN IN SCHEDULE 1/S-38

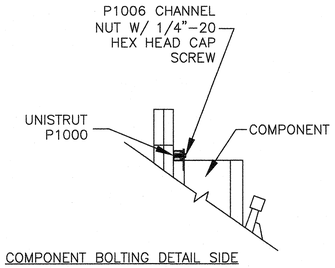


1 MULTI-BAY FREESTANDING RACK 1

SCALE: 3/4" = 1'-0"



COMPONENT BOLTING DETAIL FRONT



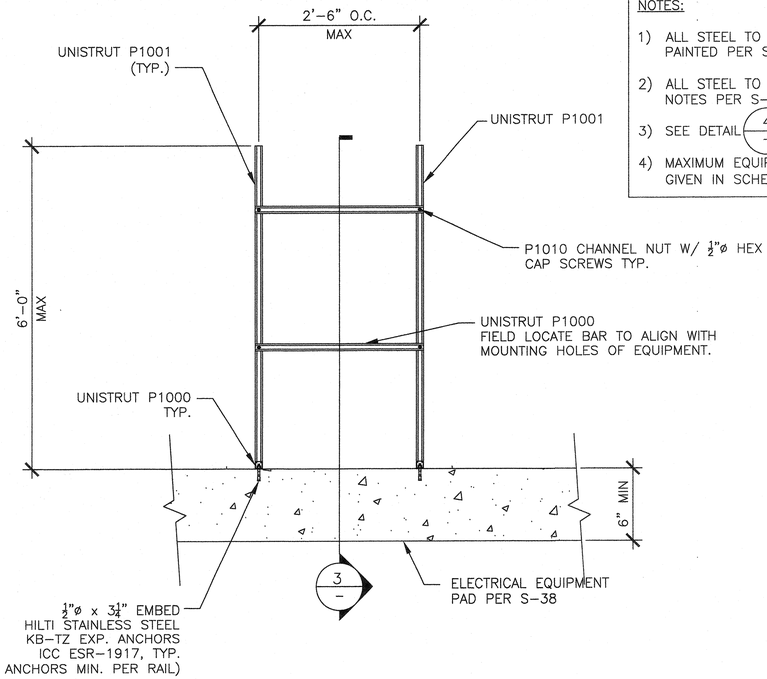
COMPONENT BOLTING DETAIL SIDE

4 RACK 1 CONNECTION DETAILS

SCALE: 1" = 1'-0"

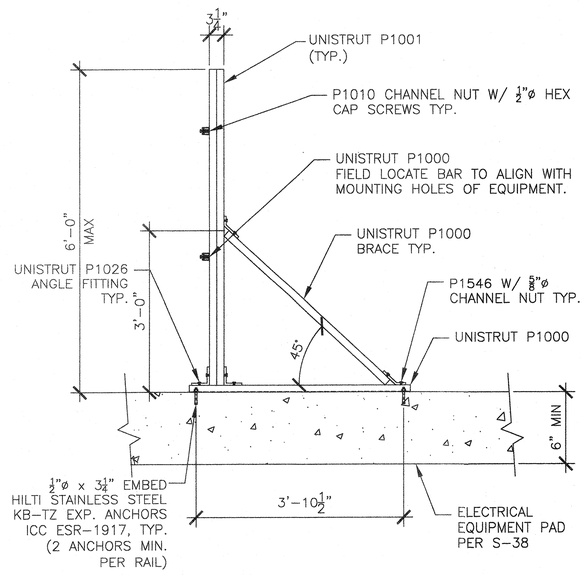
NOTES:

1) ALL STEEL TO BE GALVANIZED OR PAINTED PER STEEL NOTE 12 ON S-3
2) ALL STEEL TO MEET WITH STEEL NOTES PER S-3
3) SEE DETAIL 4/– FOR CONNECTIONS
4) MAXIMUM EQUIPMENT WEIGHT PER BAY GIVEN IN SCHEDULE 1/S-38



2 SINGLE BAY FREESTANDING RACK 1

SCALE: 3/4" = 1'-0"



3 DISCONNECT RACK 1 SIDE VIEW

SCALE: 3/4" = 1'-0"

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
03 119217
AC FLS SS
Date JUL 3 1 2018

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER JUSTIN K. RESPICIO S 5885 EXP. 06-30-2015 STRUCTURAL STATE OF CALIFORNIA

DATE SIGNED
JUNE 25, 2014

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP. P. C. 04-111125
AC FLS SS
DATE JUN 2 7 2014

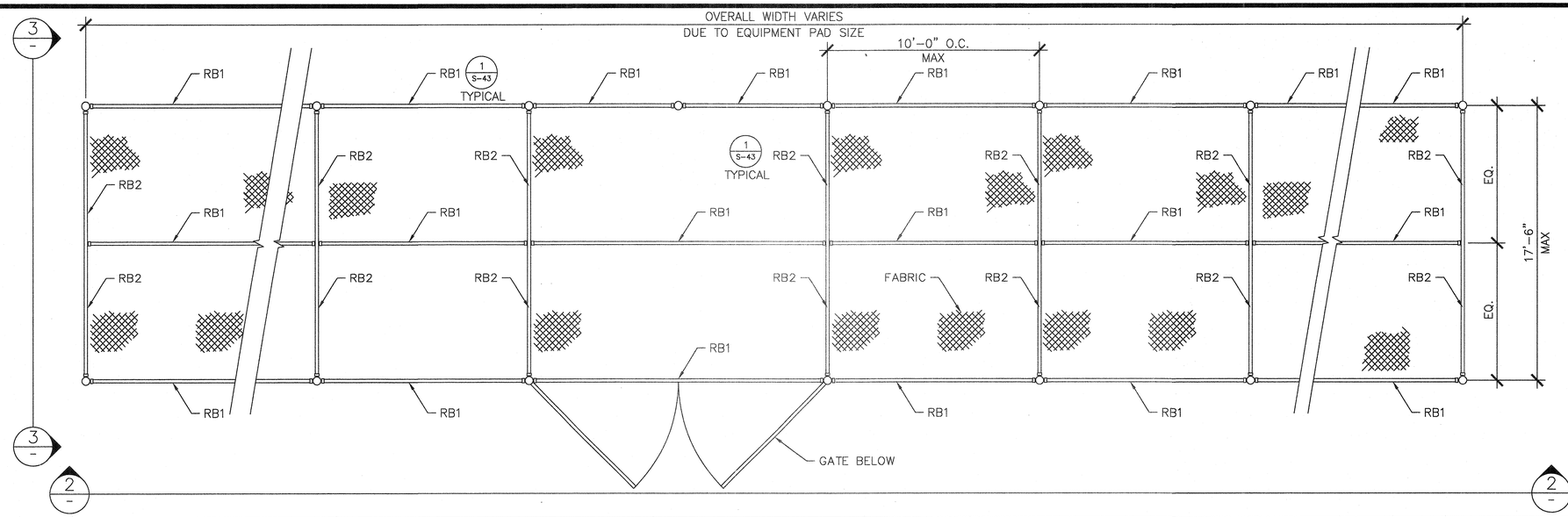
MBARC CONSTRUCTION INC.
674 RANCHEROS DR SAN MARCOS, CA 92069
PHONE: (760) 744-4133
FAX: (760) 744-4449
LIC # 867960 B AND C51

4STEL ENGINEERING
STRUCTURAL ENGINEERING
109 EAST ESCALONES SAN CLEMENTE, CA 92672
PHONE: (949) 388-9333
FAX: (949) 388-3773

PHOTOVOLTAIC STRUCTURES BRACED UNISTRUT EQUIPMENT RACK 1

DRAWN	MAP
CHECKED	DKR
DATE	6/25/14
4STEL JOB NO.	13-1010
SHEET	S-39

39 OF 45 SHEETS



1 PAD ENCLOSURE TOP VIEW

SCALE: 1/4" = 1'-0"

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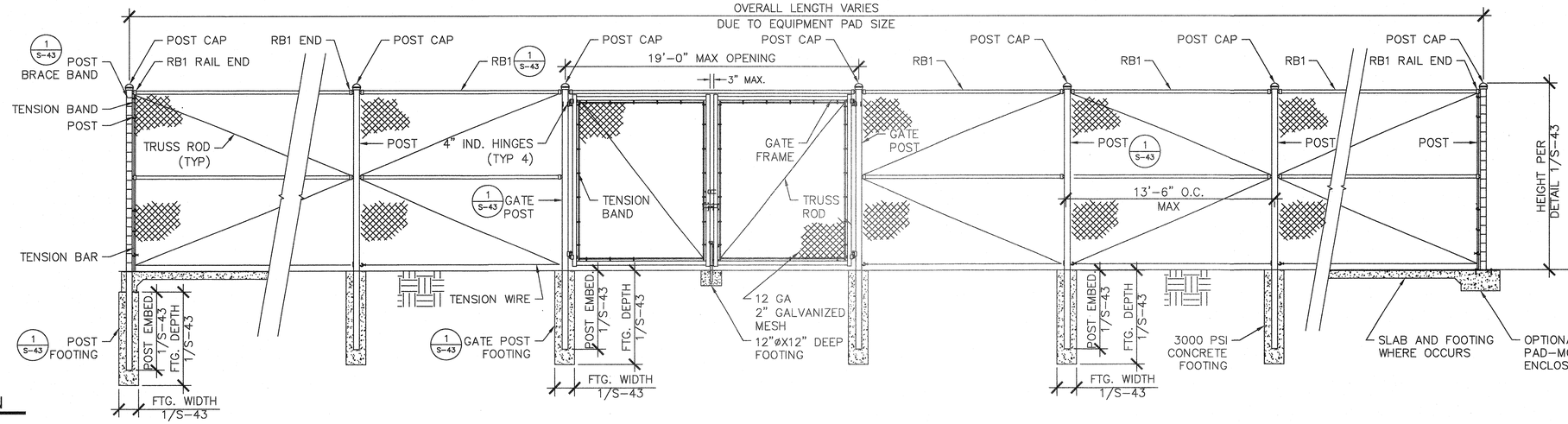
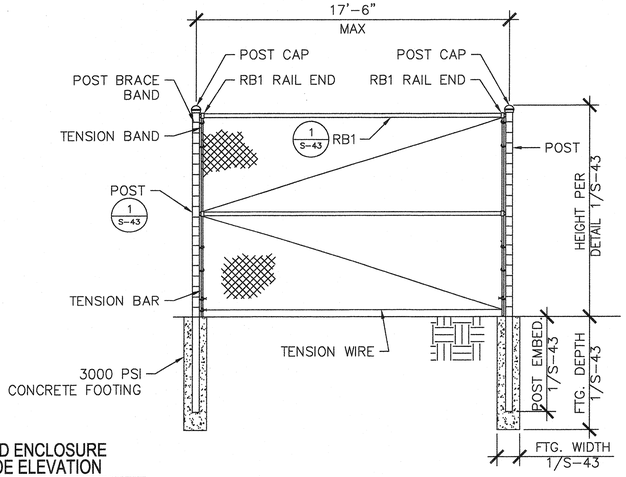
AC FLS SS
Date JUL 31 2014



2 PAD ENCLOSURE FRONT ELEVATION

SCALE: 1/4" = 1'-0"



3 PAD ENCLOSURE SIDE ELEVATION

SCALE: 1/4" = 1'-0"

NOTES:

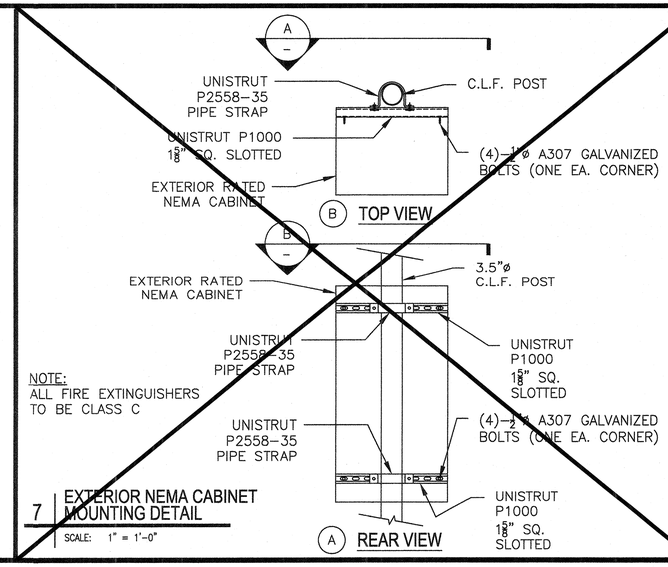
1. ALL FENCE COMPONENTS TO BE GALVANIZED.
2. PROVIDE FLEXIBLE BONDING JUMPER BETWEEN GATE POST AND FENCE POST.
3. PROVIDE PROPER CLAMP TO BOND FENCE TO THE GROUNDING SYSTEM.
4. SEE SITE SPECIFIC ELECTRICAL DRAWINGS FOR GROUNDING SPECIFICATIONS.

EQUIPMENT PAD ENCLOSURE SPECIFICATIONS:

FABRIC:	2" GALVANIZED 11 GA STD ALTERNATES PERMITTED PROVIDED SUBMITTAL SHOW % OF AIR FLOW BLOCKAGE
BARRIER:	VISUAL/WIND BARRIER – PROVIDE SUBMITTAL TO SHOW % OF AIR FLOW BLOCK
TOP RAIL:	ASTM A53, GRADE B, F_y=30 KSI
LINE POST:	ASTM A53, GRADE B, F_y=30 KSI. SEE DETAIL 1/S-43 FOR FOOTING SIZE.
TERMINAL POST:	ASTM A53, GRADE B, F_y=30 KSI SEE DETAIL 1/S-43 FOR FOOTING SIZE.
GATE:	FRAMEWORK TO BE 1 1/4" STANDARD STEEL PIPE, ASTM A53, GRADE B, F_y=30 KSI
GATE POSTS:	ASTM A53, GRADE B, F_y=30 KSI SEE DETAIL FOR FOOTING SIZE.
TOP BEAMS:	ASTM A53, GRADE B, F_y=30 KSI
TOP BRACING:	ASTM A53, GRADE B, F_y=30 KSI

4 NOTES

SCALE: N/A



7 EXTERIOR NEMA CABINET MOUNTING DETAIL

SCALE: 1" = 1'-0"

ENGINEER'S APPROVAL

REGISTERED PROFESSIONAL ENGINEER
DAVID K. ROSEBRAK
No. S 5895
EXP. 06/30/2015
STRUCTURAL ENGINEER
STATE OF CALIFORNIA

DATE SIGNED
JUNE 25, 2014

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP. # P. C. 04-119125
AC FLS SS
DATE JUN 23 2014

MBARC CONSTRUCTION INC.
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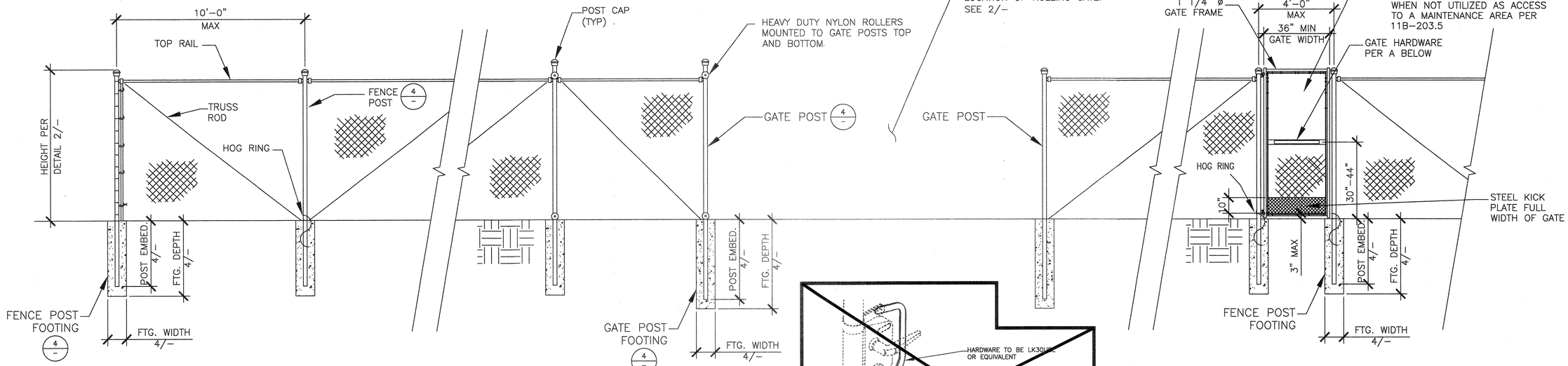
PHONE: (949) 388-9333
FAX: (949) 388-3773

PHOTOVOLTAIC STRUCTURES EQUIPMENT PAD ENCLOSURE

DRAWN	MAP
CHECKED	DKR
DATE	6/25/14
4STEL JOB NO.	13-1010
SHEET	S-42

42 OF 45 SHEETS



1 PERIMETER FENCE

SCALE: 3/8" = 1'-0"

KEY NOTES:

1. LOCK TO REMAIN UNLOCKED DURING TIMES THE SITE HAS OCCUPANCY
2. LOCK AND HANDLE TO BE SUCH THAT THE LOCK CAN REMAIN UNLOCKED SO THAT THE HANDLE MAY BE OPERATED WITH A SINGLE HAND
3. PANIC HARDWARE TO COMPLY WITH 2013 CBC 1008.1.10.1

A GATE LOCK DETAIL

SCALE: NTS

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03 119217
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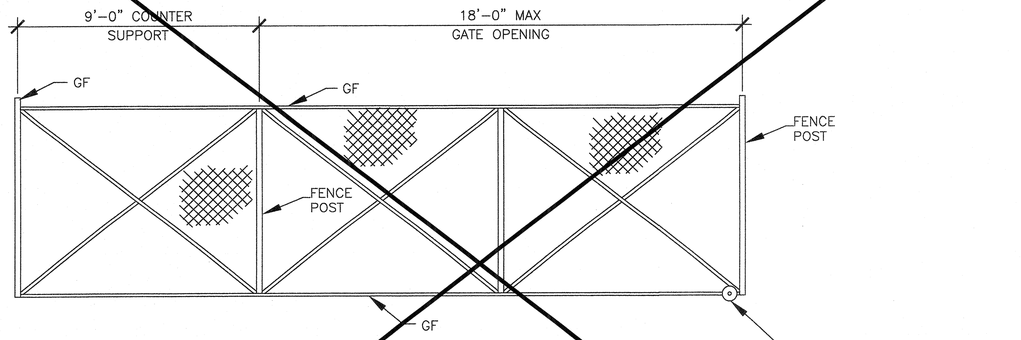
Date JUL 31 2018



2 ROLLING GATE

SCALE: 3/8" = 1'-0"

NOTES:

1. ALL FENCE COMPONENTS TO BE GALVANIZED.
2. PROVIDE FLEXIBLE BONDING JUMPER BETWEEN GATE POST AND FENCE POST.
3. PROVIDE PROPER CLAMP TO BOND FENCE TO THE GROUNDING SYSTEM.
4. SEE SITE SPECIFIC ELECTRICAL DRAWINGS FOR GROUNDING SPECIFICATIONS.

PERIMETER FENCE SPECIFICATIONS:

FABRIC:	2" GALVANIZED 11 GA STD ALTERNATES PERMITTED PROVIDED SUBMITTAL SHOW % OF AIR FLOW BLOCKAGE
BARRIER:	VISUAL/WIND BARRIER – PROVIDE SUBMITTAL TO SHOW % OF AIR FLOW BLOCK
TOP RAIL:	ASTM A53, GRADE B, F_y=30 KSI
LINE POST:	ASTM A53, GRADE B, F_y=30 KSI. SEE DETAIL 4/S-44 FOR FOOTING SIZE.
TERMINAL POST:	ASTM A53, GRADE B, F_y=30 KSI SEE DETAIL 4/- FOR FOOTING SIZE.
GATE:	FRAMEWORK TO BE 1 1/4" STANDARD STEEL PIPE, ASTM A53, GRADE B, F_y=30 KSI
GATE POSTS:	ASTM A53, GRADE B, F_y=30 KSI SEE DETAIL FOR FOOTING SIZE.
TOP BEAMS:	ASTM A53, GRADE B, F_y=30 KSI
TOP BRACING:	ASTM A53, GRADE B, F_y=30 KSI

3 NOTES

SCALE: N/A

% SOLID[2]	HEIGHT	FENCE POST/ GF	FENCE POST FOOTING DEPTH	FENCE POST FOOTING DIAMETER	FENCE POST EMBEDMENT INTO FOOTING	GATE POST	GATE POST FOOTING DEPTH	GATE POST FOOTING DIAMETER	GATE POST EMBEDMENT INTO FOOTING
100%	8'-0"	5" ø	7'-0"	24"	6'-6"	6" ø	8'-0"	24"	7'-6"
50%	8'-0"	3 1/2" ø	6'-0"	18"	5'-6"	5" ø	7'-0"	18"	6'-6"
15%	8'-0"	2 1/2" ø	4'-6"	12"	4'-0"	2 1/2" ø	5'-3"	12"	4'-9"
100%	6'-0"	4" ø	6'-0"	24"	5'-6"	5" ø	6'-9"	24"	6'-3"
50%	6'-0"	3" ø	5'-3"	18"	4'-9"	3 1/2" ø	5'-9"	18"	5'-3"
15%	6'-0"	2 1/2" ø	3'-9"	12"	3'-3"	2 1/2" ø	4'-3"	12"	3'-9"

1. READ FROM ONE LINE ONLY.
2. EXAMPLE OF % SOLID FENCING MATERIAL:
   15%: CHAIN-LINK ONLY
   50%: CHAIN-LINK WITH MESH
   100%: CHAIN-LINK WITH SLATS

4 PERIMETER FENCE SCHEDULE

SCALE: N/A

ENGINEER'S APPROVAL

DATE SIGNED
JUNE 25, 2014

SITE SPECIFIC DSA APPROVAL

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
OFFICE OF REGULATION SERVICES
APP. P. C. 04-119125
AC FLS M SS
DATE JUN 2 2014

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PHOTOVOLTAIC STRUCTURES PERIMETER FENCE/ SCHEDULE

DRAWN MAP
CHECKED DKR
DATE 6/25/14
4STEL JOB NO. 13-1010
SHEET S-44
44 OF 45 SHEETS