STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-ELC-E
This document is used to demonstrate compliance with mandatory requirements in 130.5, for electrical systems in newly constructed nonresidential and hotel/motel occupancies and 160.6 and 160.9 for electrical systems in newly constructed multifamily occupancies. Additions and alterations to electrical service systems in nonresidential and hotel/motel occupancies will also use this document to demonstrate compliance per 141.0(a) or 141.0(b)2P for alterations. For multifamily addition or alterations compliance will be documented per 180.1(a) or 180.2 (b)4Bvii	
Project Name: Bennett-Kew P-8 Academy	**Report Page:** **(Page 1 of 4)**
Project Address:	**Date Prepared:** 2024-09-24T20:41:30-04:00

A. GENERAL INFORMATION

01	Project Location (city)	Inglewood	02	Climate Zone	8
			03	Occupancy Types Within Project:	Classroom

B. PROJECT SCOPE

This table includes electrical systems that are within the scope of the permit application.

01	02	03	04	05	06	07
Electrical Service Designation/ Description	Scope of Work[1]	Rating[2] (kVA)	Utility Provided Metering System Exception to 130.5(a)/ 160.6(a)[3]	System subject to CA Elec Code Article 517 Exception to 130.5(a)and (b)	Demand Response Controls	Provides power to dwelling units/common living areas only in multifamily occupancy
ES101 and E-701	Add/Alt to feeders and branch circuits only	---	☐	☐	Where required, demand response controls must be specified which are capable of receiving and automatically responding to at least one standards based messaging protocol which enables demand response after receiving a demand response signal. Sections 120.2/ 160.3, 130.1/ 160.5, and 130.3/ 160.5, and mechanical, indoor lighting, and sign lighting Certificate of Compliance documents will indicate when demand response controls are required.	☐

[1] FOOTNOTES: Adding only new feeders and branch circuits triggers Voltage Drop 130.5(c)/160.6(c), no other requirements from 130.5/160.6 are required.
[2] If common use areas in a multifamily are submetered, rating is for submeter size serving common use areas.
[3] Applicable if the utility company is providing a metering system that indicates instantaneous kW demand and kWh for a utility-defined period.

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CERTIFICATE OF COMPLIANCE	NRCC-ELC-E
Project Name: Bennett-Kew P-8 Academy	**Report Page:** **(Page 2 of 4)**
	Date Prepared: 2024-09-24T20:41:30-04:00

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through J. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

01		02		03		04	05	06
Service Electrical Metering 130.5(a)/ 160.6(a) (See Table F)	AND	Separation for Monitoring 130.5(b)/ 160.6(b) (See Table G)	AND	Voltage Drop 130.5(c)/ 160.6(c) (See Table H)	AND	Controlled Receptacles 130.5(d)/ 160.6(d) (See Table I)	Electric Ready 160.9 (See Table J)	**Compliance Results**
	AND		AND	Yes	AND			COMPLIES

D. EXCEPTIONAL CONDITIONS

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

E. ADDITIONAL REMARKS

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

H. VOLTAGE DROP

This table includes entirely new or complete replacement electrical power distribution systems, or alterations that add, modify or replace both feeders and branch circuits to demonstrate compliance with 130.5(c)/ 160.6(c). For alterations, only the altered circuits must demonstrate compliance per 141.0(b)2Piii/ 180.2(b)4Bvic.

01	02		03	04	05	
Electrical Service Designation/Description	Combined Voltage Drop on Installed Feeder/Branch Circuit Conductors Compliance Method		Location of Voltage Drop Calculations[1]	Sheet Number for Voltage Drop Calculations in Construction Documents	Field Inspector	
					Pass	Fail
ES101 and E-701	☒ Voltage drop less than 5%	☐ Permitted by CA Elec Code (Exception to 130.5(c))*	In construction documents	E-584	☐	☐

** NOTES: If "Permitted by CA Elec Code *" is selected under Compliance Method above, please indicate where the exception applies in the space provided below.*

[1] FOOTNOTES: Voltage drop calculations may be attached to the permit application outside the construction documents if allowed by the Authority Having Jurisdiction. Select "attached" if applicable. If calculations will be the responsibility of the installing contractor, select "Contractor Responsible".

STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-ELC-E
Project Name: Bennett-Kew P-8 Academy	**Report Page:** **(Page 3 of 4)**
	Date Prepared: 2024-09-24T20:41:30-04:00

K. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

Form/Title
NRCI-ELC-E - Must be submitted for all buildings

L. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no forms required for this project.

STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-ELC-E
Project Name: Bennett-Kew P-8 Academy	**Report Page:** **(Page 4 of 4)**
Project Address:	**Date Prepared:** 2024-09-24T20:41:30-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Felipe Carvalho	Documentation Author Signature:
Company: HED	Signature Date: 09/24/2024
Address: 550 S Hope St # 2500	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Los Angeles/CA/90071	Phone: (213) 802-0766

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: Sean Bani	Responsible Designer Signature:
Company: HED	Date Signed: 09/24/2024
Address: 550 S Hope St # 2500	License: E16734
City/State/Zip: Los Angeles/CA/90071	Phone: (213) 542-4618

VOLTAGE DROP

FEEDER DESIGNATION	VOLTAGE	Vd (%)
MSB MS : DIST PNL HDB	480V 3PH	1.9
DIST PNL HDB : XFMR T3	480V 3PH	0.1
XFMR T3 : DIST PNL LDB	208V 3PH	0.1
DIST PNL LDB : PNL LP1	208V 3PH	0.1
PNL LP1: FURTHEST LOAD	120V 1PH	0.8
	TOTAL :	3

Inglewood Unified School District

IUSD Bennett-Kew P-8 Academy

11710 S Cherry Ave
Inglewood, CA 90303

△	Date	Issued For
1	11/5/2024	DSA SUBMITTAL

DSA A# 03-124773 FILE # 19-48

HED
550 South Hope Street
Suite 2500
Los Angeles, California
90071 USA

(213) 542-4500

WWW.HED.DESIGN

REGISTERED PROFESSIONAL ENGINEER
SEAN BANI-ASHA
No. E 16734
Exp. 9-30-26
ELECTRICAL
STATE OF CALIFORNIA

2023-IU002-002

Electrical Title 24 Documents

E-584

GENERAL NOTES:

1. AIC RATINGS SHOWN ON DRAWINGS ARE PENDING FINAL LOAD STUDY CALCULATION SUBMISSION BY CONTRACTOR.

KEYED NOTES

1 BREAKER SHALL BE GFCI RATED BREAKER.

2 BREAKER SHALL HAVE A RED LOCKING DEVICE TO BLOCK THE HANDLE IN THE "ON" POSITION.

3 SPD RATING SHALL BE 100kA RATED.

Branch Panel: HM

Location:
Supply From: HDB
Mounting: SURFACE
Enclosure: NEMA 1

Volts: 480Y/277
Phases: 3
Wires: 4
Ground Bus: Yes

A.I.C. Rating: 25,000 AMPS SYMMETRICAL
Mains Type: MLO
Bus Rating: 225 AMPS
GFP: No

Notes:

CCT	Count	Circuit Description	Load Type	Rating	Poles	A	B	C	A	B	C	Poles	Rating	Load Type	Circuit Description	Count	CCT
1						2882 VA			2882 VA								2
3	1	RTU-1	HVAC	20 A	3		2882 VA			2882 VA		3	20 A	HVAC	RTU-2	1	4
5								2882 VA			2882 VA						6
7						443 VA			443 VA								8
9	1	RTU-1 ECONOMIZER	HVAC	15 A	3		443 VA			443 VA		3	15 A	HVAC	RTU-2 ECONOMIZER	1	10
11								443 VA			443 VA						12
13						2882 VA			2882 VA								14
15	1	RTU-3	HVAC	20 A	3		2882 VA			2882 VA		3	20 A	HVAC	RTU-4	1	16
17								2882 VA			2882 VA						18
19						443 VA			443 VA								20
21	1	RTU-3 ECONOMIZER	HVAC	15 A	3		443 VA			443 VA		3	15 A	HVAC	RTU-4 ECONOMIZER	1	22
23								443 VA			443 VA						24
25						2882 VA			2882 VA								26
27	1	RTU-7	HVAC	20 A	3		2882 VA			2882 VA		3	20 A	HVAC	RTU-8	1	28
29								2882 VA			2882 VA						30
31						443 VA			443 VA								32
33	1	RTU-7 ECONOMIZER	HVAC	15 A	3		443 VA			443 VA		3	15 A	HVAC	RTU-8 ECONOMIZER	1	34
35								443 VA			443 VA						36
37						2882 VA			2882 VA								38
39	1	RTU-5	HVAC	20 A	3		2882 VA			2882 VA		3	20 A	HVAC	RTU-6	1	40
41								2882 VA			2882 VA						42
43						443 VA			443 VA								44
45	1	RTU-5 ECONOMIZER	HVAC	15 A	3		443 VA			443 VA		3	15 A	HVAC	RTU-6 ECONOMIZER	1	46
47								443 VA			443 VA						48
49	--	PREPARED SPACE	--	--	1	--			--			1	--	--	PREPARED SPACE	--	50
51	--	PREPARED SPACE	--	--	1		--			--		1	--	--	PREPARED SPACE	--	52
53	--	PREPARED SPACE	--	--	1			--			--	1	--	--	PREPARED SPACE	--	54
					Total...	26604 VA			26604 VA								
					Total...	96 A			96 A								

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	79811 VA	80.00%	63849 VA		
				Total Conn. Load:	79811 VA
				Total Est. Demand:	63849 VA
				Total Conn.:	96 A
				Total Est. Demand:	77 A

Notes:
Motor = LARGEST MOTOR
MN = MOTOR (NON-SEASONAL)
L = LIGHTING (CONTINUOUS)
R = RECEPTACLE
C = CONTINUOUS
PN = POWER NON-SEASONAL (NON-CONTINUOUS)
VT = VERTICAL TRANSPORTATION

Branch Panel: LP1

Location:
Supply From: LDB
Mounting: SURFACE
Enclosure: NEMA1

Volts: 208Y/120
Phases: 3
Wires: 4
Ground Bus: Yes

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MLO
Bus Rating: 225 AMPS
GFP: No

Notes:

CCT	Count	Circuit Description	Load Type	Rating	Poles	A	B	C	A	B	C	Poles	Rating	Load Type	Circuit Description	Count	CCT
1	4	CLASSROOM 104 RCPTS	Rece...	20 A	1	900 VA			1080 VA			1	20 A	Rece...	CLASSROOM 111 RCPTS	5	2
3	3	CLASSROOM 104 RCPTS	Rece...	20 A	1		540 VA			540 VA		1	20 A	Rece...	CLASSROOM 111 RCPTS	3	4
5	4	CLASSROOM 104 GFI RCPTS	Rece...	20 A	1			720 VA			720 VA	1	20 A	Rece...	CLASSROOM 111 GFI RCPTS	4	6
7	3	CLASSROOM 112 RCPTS	Rece...	20 A	1	540 VA			540 VA			1	20 A	Rece...	CLASSROOM 104 RCPTS	3	8
9	4	CLASSROOM 112 RCPTS	Rece...	20 A	1		900 VA			540 VA		1	20 A	Rece...	CLASSROOM 104 GFI RCPTS	3	10
11	3	CLASSROOM 112_GFI RCPTS	Rece...	20 A	1			540 VA			900 VA	1	20 A	Rece...	CLASSROOM 104 RCPTS	4	12
13	4	CLASSROOM 113 RCPTS	Rece...	20 A	1	900 VA			540 VA			1	20 A	Rece...	CLASSROOM 102 GFI RCPTS	3	14
15	3	CLASSROOM 113 RCPTS	Rece...	20 A	1		540 VA			540 VA		1	20 A	Rece...	CLASSROOM 102 RCPTS	3	16
17	3	CLASSROOM 113_GFI RCPTS	Rece...	20 A	1			540 VA			900 VA	1	20 A	Rece...	CLASSROOM 102 RCPTS	4	18
19	3	MAKERSPACE CORD REELS	RCPT	20 A	1	540 VA			360 VA			1	20 A	Rece...	EXTERIOR WP RCPTS	2	20
21	3	MAKERSPACE CORD REELS	RCPT	20 A	1		540 VA			900 VA		1	20 A	Rece...	RR_CUSTODIAL GFI RCPTS	5	22
23	6	MAKERSPACE GFI RCPTS	Rece...	20 A	1			1080 VA			540 VA	1	20 A	Rece...	ELEC RM RCPTS	3	24
25	2	MAKERSPACE RCPTS	Rece...	20 A	1	540 VA			360 VA			1	20 A	Rece...	IDF RCPT	1	26
27	3	MAKERSPACE RCPTS	Rece...	20 A	1		720 VA			360 VA		1	20 A	Rece...	IDF RCPT	1	28
29	2	MAKERSPAE WIREMOLDS	Rece...	20 A	1			1080 VA			2880 VA	1	30 A	Other	IDF 5-30R RCPT	1	30
31	3	ROOF WP GFI RCPTS	Rece...	20 A	1	540 VA			180 VA			1	20 A	Rece...	DRINKING FOUNTAIN	1	32
33	1	PV DIN RAIL	Other	20 A	1			120 VA		--		1	--	--	PREPARED SPACE	--	34
35	1	IRRIGATION CONTROLLER	Other	20 A	1			120 VA			--	1	--	--	PREPARED SPACE	--	36
37	--	SPARE	--	20 A	1	0 VA			--			1	--	--	PREPARED SPACE	--	38
39	--	SPARE	--	20 A	1		0 VA			--		1	--	--	PREPARED SPACE	--	40
41	--	SPARE	--	20 A	1			0 VA			--	1	--	--	PREPARED SPACE	--	42
43	--	SPARE	--	20 A	1	0 VA			--			1	--	--	PREPARED SPACE	--	44
45	--	SPARE	--	20 A	1		0 VA			--		1	--	--	PREPARED SPACE	--	46
47	--	SPARE	--	20 A	1			0 VA			--	1	--	--	PREPARED SPACE	--	48
49	--	SPARE	--	20 A	1	0 VA			--			1	--	--	PREPARED SPACE	--	50
51	1	SPD DEVICE	Other	0 A	2			0 VA			240 VA	1	20 A	PN	FIRE ALARM	1	52
53	1	SPD DEVICE	Other	0 A	2			0 VA			240 VA	1	20 A	PN	FIRE ALARM	1	54
					Total...	7020 VA		6480 VA		10260 VA							
					Total...	59 A		54 A		86 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	3120 VA	100.00%	3120 VA		
RCPT	1080 VA	100.00%	1080 VA	**Total Conn. Load:**	23760 VA
PN	480 VA	100.00%	480 VA	**Total Est. Demand:**	19220 VA
Receptacle - General	19080 VA	76.21%	14540 VA	**Total Conn.:**	66 A
				Total Est. Demand:	53 A

Notes:
Motor = LARGEST MOTOR
MN = MOTOR (NON-SEASONAL)
L = LIGHTING (CONTINUOUS)
R = RECEPTACLE
C = CONTINUOUS
PN = POWER NON-SEASONAL (NON-CONTINUOUS)
VT = VERTICAL TRANSPORTATION

Branch Panel: HL

Location:
Supply From: HDB
Mounting: SURFACE
Enclosure: NEMA 1

Volts: 480Y/277
Phases: 3
Wires: 4
Ground Bus: Yes

A.I.C. Rating: 25,000 AMPS SYMMETRICAL
Mains Type: MLO
Bus Rating: 100 AMPS
GFP: No

Notes:

CCT	Count	Circuit Description	Load Type	Rating	Poles	A	B	C	A	B	C	Poles	Rating	Load Type	Circuit Description	Count	CCT
1	3	EM POLE LIGHTS	LIGH...	20 A	1	208 VA			1994 VA			1	20 A	LIGH...	LIGHTING INVERTER/ LCP	2	2
3	24	EM EXTERIOR LIGHTS	LIGH...	20 A	1		317 VA			--		1	--	--	PREPARED SPACE	--	4
5	5	EXTERIOR CANOPY LIGHTS	LIGH...	20 A	1			106 VA			--	1	--	--	PREPARED SPACE	--	6
7	42	CLASSROOM LIGHTS / EM...	LIGH...	20 A	1	3506 VA			--			1	--	--	PREPARED SPACE	--	8
9	17	MAKERSPACE RM LIGHTS	LIGH...	20 A	1		1213 VA			--		1	--	--	PREPARED SPACE	--	10
11	16	RESTROOM LIGHTS	LIGH...	20 A	1			604 VA			--	1	--	--	PREPARED SPACE	--	12
13	--	SPARE	--	20 A	1	0 VA			--			1	--	--	PREPARED SPACE	--	14
15	--	SPARE	--	20 A	1		0 VA			--		1	--	--	PREPARED SPACE	--	16
17	--	SPARE	--	20 A	1			0 VA			--	1	--	--	PREPARED SPACE	--	18
19	--	SPARE	--	20 A	1	0 VA			--			1	--	--	PREPARED SPACE	--	20
21	--	PREPARED SPACE	--	--	1		--			--		1	--	--	PREPARED SPACE	--	22
23	--	PREPARED SPACE	--	--	1			--			--	1	--	--	PREPARED SPACE	--	24
25	--	PREPARED SPACE	--	--	1	--			--			1	--	--	PREPARED SPACE	--	26
27	--	PREPARED SPACE	--	--	1		--			--		1	--	--	PREPARED SPACE	--	28
29	--	PREPARED SPACE	--	--	1			--			--	1	--	--	PREPARED SPACE	--	30
					Total...	5708 VA		1530 VA		710 VA							
					Total...	21 A		6 A		3 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
LIGHTS	7948 VA	125.00%	9934 VA		
				Total Conn. Load:	7948 VA
				Total Est. Demand:	9934 VA
				Total Conn.:	10 A
				Total Est. Demand:	12 A

Notes:
Motor = LARGEST MOTOR
MN = MOTOR (NON-SEASONAL)
L = LIGHTING (CONTINUOUS)
R = RECEPTACLE
C = CONTINUOUS
PN = POWER NON-SEASONAL (NON-CONTINUOUS)
VT = VERTICAL TRANSPORTATION

Branch Panel: LM

Location:
Supply From: LDB
Mounting: SURFACE
Enclosure: NEMA1

Volts: 208Y/120
Phases: 3
Wires: 4
Ground Bus: Yes

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MLO
Bus Rating: 225 AMPS
GFP: No

Notes:

CCT	Count	Circuit Description	Load Type	Rating	Poles	A	B	C	A	B	C	Poles	Rating	Load Type	Circuit Description	Count	CCT
1	1	EF-1	HVAC	15 A	1	276 VA			2184 VA			2	30 A	Other	DWH-1	1	2
3	1	EF-2	HVAC	15 A	1		276 VA			2184 VA							4
5	1	EF-3	Other	15 A	1			98 VA			180 VA	1	20 A	Rece...	DWH-1 PUMP	1	6
7	1	CU-1	HVAC	30 A	2	2080 VA			--			1	--	--	PREPARED SPACE	--	8
9	1	CU-1					2080 VA			--		1	--	--	PREPARED SPACE	--	10
11	--	SPARE	--	20 A	1			0 VA			--	1	--	--	PREPARED SPACE	--	12
13	--	SPARE	--	20 A	1	0 VA			--			1	--	--	PREPARED SPACE	--	14
15	--	SPARE	--	20 A	1		0 VA			--		1	--	--	PREPARED SPACE	--	16
17	--	SPARE	--	20 A	1			0 VA			--	1	--	--	PREPARED SPACE	--	18
19	--	SPARE	--	20 A	1	0 VA			--			1	--	--	PREPARED SPACE	--	20
21	--	SPARE	--	20 A	1		0 VA			--		1	--	--	PREPARED SPACE	--	22
23	--	PREPARED SPACE	--	--	1			--			--	1	--	--	PREPARED SPACE	--	24
25	--	PREPARED SPACE	--	--	1	--			--			1	--	--	PREPARED SPACE	--	26
27	--	PREPARED SPACE	--	--	1		--			--		1	--	--	PREPARED SPACE	--	28
29	--	PREPARED SPACE	--	--	1			--			--	1	--	--	PREPARED SPACE	--	30
					Total...	4540 VA		4540 VA		278 VA							
					Total...	43 A		43 A		2 A							

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
HVAC	4712 VA	80.00%	3770 VA		
Other	4466 VA	100.00%	4466 VA	**Total Conn. Load:**	9358 VA
Receptacle - General	180 VA	100.00%	180 VA	**Total Est. Demand:**	8416 VA
				Total Conn.:	26 A
				Total Est. Demand:	23 A

Notes:
Motor = LARGEST MOTOR
MN = MOTOR (NON-SEASONAL)
L = LIGHTING (CONTINUOUS)
R = RECEPTACLE
C = CONTINUOUS
PN = POWER NON-SEASONAL (NON-CONTINUOUS)
VT = VERTICAL TRANSPORTATION

Inglewood Unified School District

IUSD Bennett-Kew P-8 Academy

11710 S Cherry Ave
Inglewood, CA 90303

△	Date	Issued For
1	11/5/2024	DSA SUBMITTAL

DSA A# 03-124773 FILE # 19-48

HED
550 South Hope Street
Suite 2500
Los Angeles, California
90071 USA

(213) 542-4500

WWW.HED.DESIGN

REGISTERED PROFESSIONAL ENGINEER
SEAN DANI-AINA
No. E 16734
Exp. 9-30-26
ELECTRICAL
STATE OF CALIFORNIA

2023-IU002-002

Panel Schedules

E-601

GENERAL NOTES:

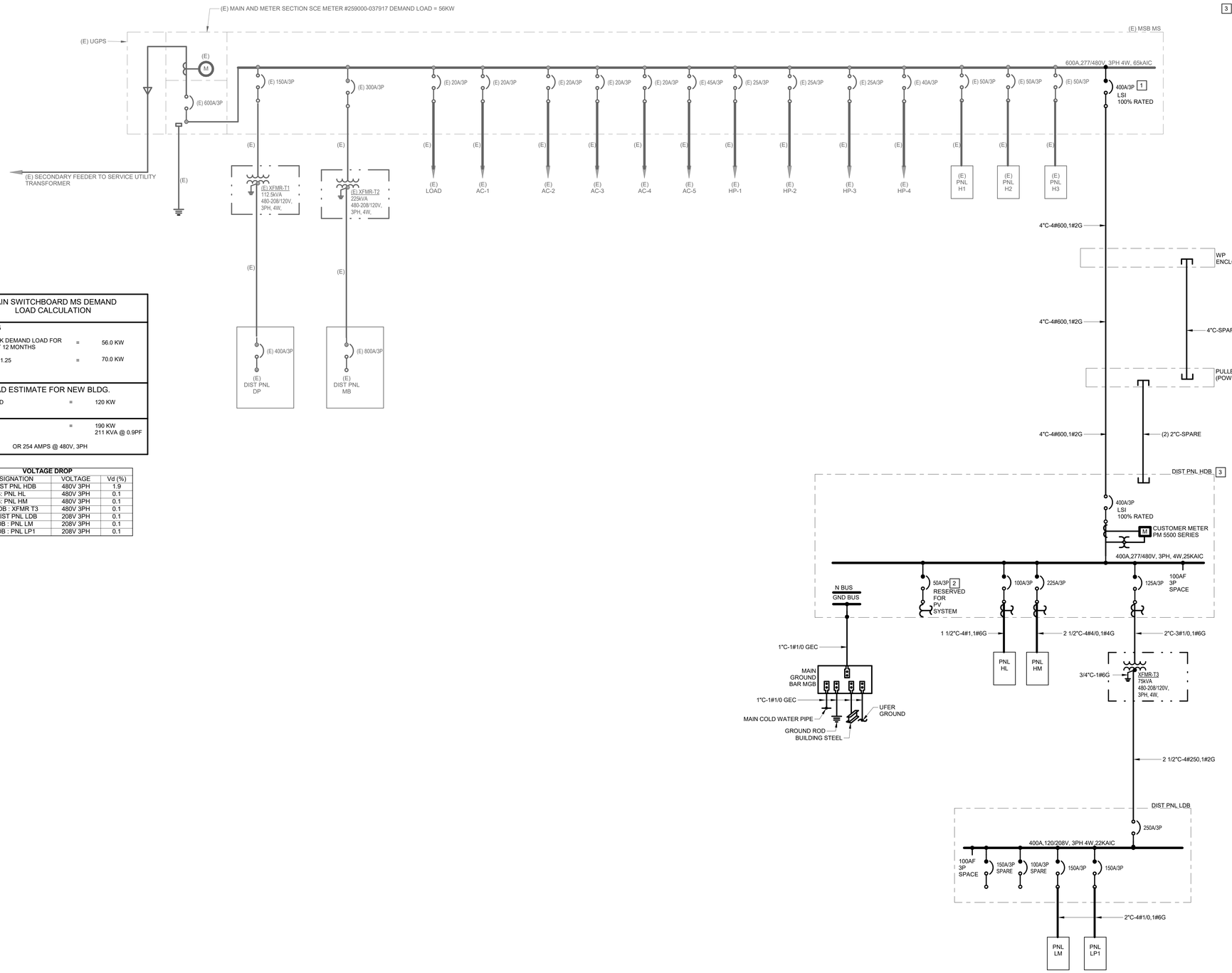
1. REFER TO THREE PHASE TRANSFORMER DETAIL ON SHEET E002 FOR INFORMATION REGARDING TRANSFORMER GROUNDING.
2. AIC RATINGS SHOWN ON DRAWINGS ARE PENDING FINAL LOAD STUDY CALCULATION SUBMISSION BY CONTRACTOR.

KEYED NOTES

1 PROVIDE AND INSTALL NEW BREAKER IN EXISTING SWITCHBOARD SPACE. BREAKER SHALL BE OF SAME TYPE AND RATING AS EXISTING.

2 PROVIDE BI-DIRECTIONAL BREAKER. REFER TO PV SHEETS FOR ADDITIONAL INFORMATION.

3 PROVIDE LABELS AS REQUIRED PER CEC 705.12.



MAIN SWITCHBOARD MS DEMAND LOAD CALCULATION		
EXISTING		
MAX. PEAK DEMAND LOAD FOR THE PAST 12 MONTHS	=	56.0 KW
56.0KW X 1.25	=	70.0 KW
NEW LOAD ESTIMATE FOR NEW BLDG.		
NEW LOAD	=	120 KW
TOTAL	=	190 KW 211 KVA @ 0.9PF
OR 254 AMPS @ 480V, 3PH		

VOLTAGE DROP		
FEEDER DESIGNATION	VOLTAGE	Vd (%)
MSB MS : DIST PNL HDB	480V 3PH	1.9
DT PNL HDB: PNL HL	480V 3PH	0.1
DT PNL HDB: PNL HM	480V 3PH	0.1
DIST PNL HDB : XFMR T3	480V 3PH	0.1
XFMR T3 : DIST PNL LDB	208V 3PH	0.1
DIST PNL LDB : PNL LM	208V 3PH	0.1
DIST PNL LDB : PNL LP1	208V 3PH	0.1

Electrical One-Line Diagram

SCALE:
N.T.S.

Inglewood Unified School District

IUSD Bennett-Kew P-8 Academy

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Inglewood, CA 90303

△	Date	Issued For
1	11/5/2024	DSA SUBMITTAL

DSA A# 03-124773 FILE # 19-48

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Exp. 9-30-26
ELECTRICAL
STATE OF CALIFORNIA

2023-IU002-002

Electrical One-Line Diagram

E-701

4/7/2025 9:54:33 AM

ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT
ACDS	AC DISCONNECT
ADA	AMERICANS WITH DISABILITIES ACT
AFC	AVAILABLE FAULT CURRENT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BESS	BATTERY ENERGY STORAGE SYSTEM
BLDG	BUILDING
CLR	CLEAR
CN	CARPORT, NEW
CONC	CONCRETE
C.O.U.	CONDITIONS OF USE
CR	CARPORT, RETROFIT
DC	DIRECT CURRENT
DIA	DIAMETER
DIST	DISTANCE
EQ	EQUAL
EGC	EQUIPMENT GROUNDING CONDUCTOR
(E)	EXISTING
EA.	EACH
EMT	ELECTRICAL METALLIC TUBING
GALV	GALVANIZED
GEC	GROUNDING ELECTRODE CONDUCTOR
GND	GROUND
HDG	HOT DIPPED GALVANIZED
I	CURRENT
Imp	CURRENT AT MAX POWER
INVS	INVERTERS
Isc	SHORT CIRCUIT CURRENT
kVA	KILOVOLT AMPERE
kW	KILOWATT
kWh	KILOWATT-HOUR
LBW	LOAD BEARING WALL
MAX	MAXIMUM
MIN	MINIMUM
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OCP	OVERCURRENT PROTECTION
PCS	POWER CONTROL SYSTEM
PL	PROPERTY LINES
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE
RB	ROOF, BALLAST
RF	ROOF, FLUSH MOUNT
SCH	SCHEDULE
SQ. IN.	SQUARE INCHES
SS	STAINLESS STEEL
SSD	SEE STRUCTURAL DRAWINGS
STC	STANDARD TESTING CONDITIONS
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
VIF	VERIFY IN FIELD
V	VOLT
Vmp	VOLTAGE AT MAX POWER
Voc	VOLTAGE AT OPEN CIRCUIT
W	WATT
3R	NEMA 3R, RAINTIGHT

SCOPE OF WORK

1. PROVIDE PERFORMANCE BASED PHOTOVOLTAIC ELECTRICAL SYSTEM, PV SYSTEM SIZE TO COMPLY WITH MINIMUM TITLE-24 REQUIREMENTS
2. PV SYSTEM MOUNTING FRAME/STRUCTURE SELECTION AND SPECS PROVISIONS BY OTHERS AND IS NOT PART OF THIS DESIGN
3. PROVIDE ONE LINE DIAGRAM SHOWING THE CONNECTION OF PV PANELS TO ELECTRICAL PANEL
4. SPECIFY PV ELECTRICAL EQUIPMENT INCLUDING BUT NOT LIMITED TO PV PANELS, INVERTER, DISCONENCTS , ENERGY MONITORS ETC.
5. PROVIDE PV LABELING , ELECTRICAL CONNECTION DETAILS
6. REFER TO STRUCTURAL DRAWINGS FOR MOUNTING DETAILS
7. COORDINATION WITH POWER COMPANY(LADWP) IS NOT INCLUDED, CONTRACTOR TO SUBMIT PLANS TO LADWP AND OBTAIN APPROVAL PRIOR TO INSTALLATION OF PV SYSTEM

ELECTRICAL PV SHEET INDEX

LEGEND

~	AC CONNECTION
RSD	RAPID SHUTDOWN
	SOLAR PANELS
	CIRCUIT BREAKER, NO OF POLES, SIZE PER PLANS
	DISCONNECT SWITCH

APPLICABLE CODES

CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING PARTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR):

PART 1	2022 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE, TITLE 24 C.C.R.
PART 2	2022 CALIFORNIA BUILDING CODE (CBC), TITLE 24 C.C.R (2021 INTERNATIONAL BUILDING CODE OF THE INTERNATIONAL CODE COUNCIL WITH CALIFORNIA AMENDMENTS).
PART 3	2022 CALIFORNIA ELECTRICAL CODE (CEC), TITLE 24 C.C.R. (2023 NATIONAL ELECTRIC CODE OF THE NATIONAL FIRE PROTECTION ASSOCIATION, NFPA)
PART 4	2022 CALIFORNIA MECHANICAL CODE (CMC), TITLE 24 C.C.R. (2021 UNIFORM MECHANICAL CODE OF THE INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS IAPMO).
PART 5	2022 CALIFORNIA PLUMBING CODE (CPC), TITLE 24 C.C.R. (2021 UNIFORM PLUMBING CODE OF THE INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS IAPMO).
PART 6	2022 CALIFORNIA ENERGY CODE (CEC), TITLE 24 C.C.R.
PART 9	2022 CALIFORNIA FIRE CODE (CFC), TITLE 24 (2021 INTERNATIONAL FIRE CODE OF THE INTERNATIONAL CODE COUNCIL).
PART 10	2022 CALIFORNIA EXISTING BUILDING CODE, TITLE 24 C.C.R. (2021 INTERNATIONAL EXISTING BUILDING CODE OF THE INTERNATIONAL CODE COUNCIL WITH CALIFORNIA AMENDMENTS).
PART 11	2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN CODE), TITLE 24 C.C.R.
PART 12	2022 CALIFORNIA REFERENCED STANDARDS, TITLE 24 C.C.R.
TITLE 19	CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS
	2013 ASME A17.1/CSA B44-13 SAFETY CODE FOR ELEVATOR AND ESCALATORS

PARTIAL LIST OF APPLICABLE STANDARDS:

NFPA 13	STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS (CA AMENDED) 2022 EDITION
NFPA 14	STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS 2022 EDITION
NFPA 17	STANDARD FOR DRY CHEMICAL EXTINGUISHING SYSTEMS 2021 EDITION
NFPA 17A	STANDARD FOR WET CHEMICAL EXTINGUISHING SYSTEMS 2021 EDITION
NFPA 20	STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION 2022 EDITION
NFPA 22	STANDARD FOR WATER TANKS FOR PRIVATE FIRE PROTECTION 2018 EDITION
NFPA 24	STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES 2022 EDITION
NFPA 72	NATIONAL FIRE ALARM AND SIGNALING CODE (CA AMENDED) 2022 EDITION
NFPA 80	STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES 2019 EDITION
NFPA 2001	STANDARD ON CLEAN AGENT FIRE EXTINGUISHING SYSTEMS 2022 EDITION
UL 300	STANDARD FOR FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF COMMERCIAL COOKING EQUIPMENT 2022 EDITION
UL 464	AUDIBLE SIGNALING DEVICES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES 2023 EDITION
UL 521	STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS 2023 EDITION
UL 1971	STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED 2002 EDITION

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2022 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80.
SEE CALIFORNIA BUILDING CODE, CHAPTER 35, FOR STATE OF CALIFORNIA AMENDMENTS TO THE NFPA STANDARDS.

* ALL PARTS OF THE 2022 CALIFORNIA BUILDING CODE BECOME EFFECTIVE JANUARY 1, 2022 EXCEPT THE EFFECTIVE DATE FOR THE USE OF THE 2022 BUILDING ENERGY EFFICIENCY STANDARDS (TITLE 24,PART 1, CHAPTER 10) IS JANUARY 8, 2022 AND THE EFFECTIVE DATE FOR THE USE OF THE CALIFORNIA ADMINISTRATIVE CODE (TITLE 24, PART 1, CHAPTER 4) IS JANUARY 8, 2022.

GENERAL NOTES

STRUCTURAL NOTES:

- RACKING SYSTEM & PV ARRAY SHALL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A 1" SPACE BETWEEN MODULES, RAILS MUST ALSO EXTEND A MIN. 3" BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY.
- ROOF MOUNTED STANDARD RAIL REQUIRES ONE THERMAL EXPANSION GAP FOR EVERY RUN OF RAIL GREATER THAN 40'.
- ARRAY SHALL BE A MIN. HEIGHT OF 3" ABOVE THE COMPOSITION ROOF.
- JUNCTION BOX SHALL BE INSTALLED PER MANUFACTURERS SPECIFICATIONS. IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.
- ROOFTOP PENETRATIONS PERTAINING TO SOLAR RACKING WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR
- ALL PV RELATED RACKING ATTACHMENTS WILL BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER. O.C. FINAL ATTACHMENT LOCATIONS MAY BE ADJUSTED IN THE FIELD AS CECESSARY.
- ALL PV RELATED RACKING ATTACHMENTS SHALL BE STAGGERED BY ROW AMONGST THE ROOF FRAMING MEMBERS.
- CONTRACTOR TO PROVIDE WOOD SCREWS, WOOD BLOCKING , ANGLE CLIPS AND ALL REQUIRED ACCESSORIES FOR EQUIPMENT MOUNTING. FOLLOW MANUFACTURER INSTALLATION MANUAL AND STRUCTURAL DRAWINGS FOR MOUNTING.

GROUNDING NOTES

- A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH [CEC 690-47] AND [CEC 250-50] THROUGH [CEC 60 250-166] SHALL BE PROVIDED. PER CEC, GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO AT THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE. OR IS ONLY METALLIC WATER PIPING, A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT GROUND ROD WITH ACORN CLAMP.
- GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO GREATER THAN #6 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE FOR A COMPLETE SYSTEM.
- PV SYSTEM SHALL BE GROUNDED IN ACCORDANCE TO [CEC 250.21], CEC TABLE 250.122], AND ALL METAL PARTS OR MODULE FRAMES ACCORDING TO [CEC 690.43]
- MODULE SOURCE CIRCUITS SHALL BE GROUNDED IN ACCORDANCE TO [CEC 690.42].
- THE GROUNDING CONCECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDED CONDUCTOR TO ANOTHER MODULE.
- EACH MODULE WILL BE GROUNDED USING THE SUPPLIED CONCECTIONS POINTS IDENTIFIED IN THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- ENCLOSURES SHALL BE PROPERLY PREPARED WITH REMOVAL OF PAINT/FINISH AS APPROPRIATE WHEN GROUNDING EQUIPMENT WITH TERMINATION GROUNDING LUGS
- GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVISES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR DIRECT BURIAL
- GROUNDING AND BONDING CONDUCTORS SHALL BE COPPER SOLID OR STRANDED, AND BARE WHEN EXPOSED.
- EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZE ACCORDING TO [CEC 690.451] AND BE A MINIMUM OF #10AWG WHEN NOT EXPOSED TO DAMAGE (#6AWG SHALL BE USED WHEN EXPOSED TO DAMAGE).
- GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLOR CODED GREEN (OR MARKED GREEN IF #4 AWG OR LARGER)
- ALL CONDUIT BETWEEN THE UTILITY AC DISCONCECT AND THE POINT OF CONCECTION SHALL HAVE GROUNDED BUSHINGS AT BOTH ENDS
- AC SYSTEM GEC SIZED ACCORDING TO [CEC 690.47], [CEC TABLE 250.66), DC SYSTEM GEC SIZED ACCORDING TO [CEC 250.166], MINIMUM #8AWG WHEN INSULATED, #6AWG WHEN EXPOSED TO DAMAGE.
- EXPOSED NON-CURRENT CARRYING METAL PARTS OF MODULE FRAMES, EQUIPMENTS AND CONDUCTOR ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH 250.134 OR 250.136(A) REGARDLESS OF VOLTAGE.

INTERCONNECTION NOTES

- PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED AT THE OPPOSITE END OF THE BUS FROM THE MAIN SERVICE BREAKER OR TRANSFORMER INPUT FEEDER IN ACCORDANCE WITH [CEC 690.64(B)(7)]
- SUM OF BREAKER RATINGS SUPPLYING THE BUS MAY NOT EXCEED 120% OF THE BUSBAR RATING PER [CEC 690.64(B)(2)] AND/OR [CEC 705.12(D)(1)].
- GROUND FAULT PROTECTION IN ACCORDANCE WITH [CEC 215.9] & [CEC 230.95] ALL EQUIPMENT TO BE RATED FOR BACKFEEDING.
- SUPPLY SIDE INTERCONCECTION ACCORDING TO [CEC 690.64(A)] AND/OR [CEC 705.12(A)] WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH [CEC 230.42(B)]
- MICROINVERTER BRANCHES SHALL BE CONCECTED TO A SINGLE BREAKER OCPD IN ACCORDANCE WITH [CEC 110.3(B)]
- SUPPLY SIDE INTERCONNECTIONS SHALL COMPLY WITH ART. 705.11
- LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 705.12]
- FEEDER TAP INTERCONNECTION (LOAD SIDE) ACCORDING TO NEC 705.12 (B)(2)
- SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.11 WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42.
- BACKFEEDING BREAKER FOR UTILITY-INTERACTIVE INVERTER OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (E)].

DISCONNECT AND OVER-CURRENT PROTECTION NOTES

- DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING LIVE ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS)
- AC DISCONNECT MUST BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
- DC CURRENT CONDUCTORS ARE TO REMAIN OUTSIDE OF BUILDING PRIOR TO EITHER A FUSEABLE SOURCE CIRCUIT COMBINER BOX OR A LOAD-BREAK DISCONCECTING DEVICE
- BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED. THEREFORE BOTH MUST OPEN WHERE A DISCONNECT IS REQUIRED, ACCORDING TO NEC 690.13
- DC DISCONNECT INTEGRATED INTO ROOFTOP DC COMBINER OR INSTALLED WITHIN 10 FT, ACCORDING TO NEC 690.15(A).
- ALL PV CIRCUITS LOCATED OUTSIDE THE ARRAY BOUNDARY OR MORE THAN 3 FT FROM THE POINT OF ENTRY INSIDE A BUILDING SHALL BE LIMITED TO NOT MORE THAN 30 VOLTS WITHIN 30 SECONDS, CIRCUITS INSIDE THE ARRAY BOUNDARY OR NOT MORE THAN 3 FT FROM THE POINT OF PENETRATION SHALL BE LIMITED TO NOT MORE THAN 80 VOLTS UPON RAPID SHUT-DOWN INITIATION PER 690.12.
- ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.
- BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED, THEREFORE BOTH REQUIRE OVER-CURRENT PROTECTION, ACCORDING TO NEC 240.21. (SEE EXCEPTION IN NEC 690.9)
- IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.

EQUIPMENT LOCATIONS

- ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY [CEC 110.26].
- EQUIPMENT INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY CEC [690.31 (A)-(B) AND [CEC TABLE 310.15(B)2XC)].
- ADDITIONAL AC DISCONCECTS SHALL BE PROVIDED WHERE THE INVERTER IS NOT ADJACENT TO THE UTILITY AC DISCONNECT, OR NOT WITHIN SIGHT OF THE UTILITY AC DISCONNECT.
- ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO CEC APPLICABLE CODES.
- ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.
- JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO CEC 690.34

SITE NOTES

- A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS AN UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
- THE SOLAR PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
- PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION [CEC 110.26]
- ALTERNATE POWER SOURCE PLACARD SHALL BE PLASTIC, ENGRAVED IN A CONTRASTING COLOR TO THE PLAQUE. THIS PLAQUE WILL BE ATTACHED USING AN APPROVED METHOD, IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE CEC.
- THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE BETWEEN THE GROUNDING ELECTRODE AND THE PANEL (OR INVERTER) IF SMALLER THAN #6 AWG COPPER WIRE PER CEC 250-64B. THE GROUNDING ELECTRODE CONDUCTOR WILL BE CONTINUOUS, EXCEPT FOR SPLICES OR JOINTS AT BUSBARS WITHIN LISTED EQUIPMENT PER [CEC 250.64C.]
- ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SHALL SERVE TO PROTECT THE BUILDING OR STRUCTURE.
- RIGID CONDUIT (AND/OR NIPPLES) MUST HAVE A PULL BUSHING TO PROTECT WIRES.
- BOLTED CONNECTION REQUIRED IN DC DISCONNECTS ON THE WHITE GROUNDED CONDUCTOR (USE POLARIS BLOCK OR NEUTRAL BAR).
- ANY CONNECTION ABOVE LIVE PARTS MUST BE WATERTIGHT, REDUCING WASHERS DISALLOWED ABOVE LIVE PARTS, MEYERS HUBS RECOMMENDED.

SOLAR CONTRACTOR

- MODULE CERTIFICATIONS WILL INCLUDE UL1703, IEC61646, IEC61730.
- IF APPLICABLE, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE MARKED GROUNDING LUG HOLES PER THE MANUFACTURERS' INSTALLATION REQUIREMENTS.
- AS INDICATED BY DESIGN, OTHER NRTL LISTED MODULE GROUNDING DEVICES MAY BE USED IN PLACE OF STANDARD GROUNDING LUGS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ.
- CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.
- CONDUIT POINT OF PENETRATION FROM EXTERIOR TO INTERIOR TO BE INSTALLED AND SEALED WITH A SUITABLE SEALING COMPOUND.
- DC WIRING LIMITED TO MODULE FOOTPRINT W/ ENPHASE AC SYSTEM.
- ENPHASE WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/ SUITABLE WIRING CLIPS.
- MAX DC VOLTAGE CALCULATED USING MANUFACTURER PROVIDED TEMP COEFFICIENT FOR VOC UNLESS NOT AVAILABLE.
- ALL INVERTERS. MOTOR GENERATORS, PHOTOVOLTAIC MODULES, PHOTOVOLTAIC PANELS, AC PHOTOVOLTAIC MODULES, SOURCE CIRCUIT COMBINERS, AND CHARGE CONTROLLERS INTENDED FOR USE IN A PHOTOVOLTAIC POWER SYSTEM WILL BE IDENTIFIED AND LISTED FOR THE APPLICATION PER 690.4 (D).
- ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE.

WIRING & CONDUIT NOTES

- ALL CONDUIT SIZES AND TYPES, SHALL BE LISTED FOR ITS PURPOSE AND APPROVED FOR THE SITE APPLICATIONS.
- ALL PV CABLES AND HOMERUN WIRES BE #10AWG *USE-2, PV WIRE, OR PROPRIETARY SOLAR CABLING SPECIFIED BY MER, OR EQUIVALENT; ROUTED TO SOURCE CIRCUIT COMBINER BOXES AS REQUIRED.
- ALL CONDUCTORS AND OCPD SIZES AND TYPES SPECIFIED ACCORDING TO [CEC 690.8 (A)(1) & (B)(1)], [CEC 240] [CEC 690.7] FOR MULTIPLE CONDUCTORS.
- ALL PV DC CONDUCTORS IN CONDUIT EXPOSED TO SUNLIGHT SHALL BE DERATED ACCORDING TO [CEC TABLE 310.15 (B)(2XC)] BLACK ONLY**
- EXPOSED ROOF PV DC CONDUCTORS SHALL BE USE-2. 90°C RATED, WET AND UV RESISTANT, AND UL LISTED RATED FOR 600V, UV RATED SPIRAL WRAP SHALL BE USED TO PROTECT WIRE FROM SHARP EDGES.
- PHASE AND NEUTRAL CONDUCTORS SHALL BE DUAL RATED THHN/THWN-2 INSULATED, 90°C RATED, WET AND UV RESISTANT, RATED FOR 600V PER CEC 2008 OR 1000V PER CEC 2011
- 4-WIRE DELTA CONNECTED SYSTEMS HAVE THE PHASE WITH THE HIGHER VOLTAGE TO GROUND MARKED ORANGE OR IDENTIFIED BY OTHER EFFECTIVE MEANS.
- ALL SOURCE CIRCUITS SHALL HAVE INDIVIDUAL SOURCE CIRCUIT. PROTECTION.
- VOLTAGE DROP LIMITED TO 2% FOR DC CIRCUITS AND 1% FOR AC CIRCUITS.

- NEGATIVE GROUNDED SYSTEMS DC CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:
  1. DC POSITIVE- RED (OR MARKED RED)
  2. DC NEGATIVE-GREY (OR MARKED GREY)

- POSITIVE GROUNDED SYSTEMS DC CONDUCTORS COLOR CODED:

  1. DC POSITIVE- GREY (OR MARKED GREY)
  2. DC NEGATIVE-BLACK (OR MARKED BLACK)

- AC CONDUCTORS >4AWG COLOR CODED OR MARKED:
-
  1. PHASE A OR L1- BLACK
  2. PHASE B OR L2- RED
  3. PHASE C OR L3- BLUE
  4. NEUTRAL- WHITE/GRAY
- *USE-2 IS NOT INDOOR RATED BUT PV CABLE IS RATED THWN/THWN-2 AND MAY BE USED INSIDE
- ** USE-2 IS AVAILABLE AS UV WHITE

SPARE EQUIPMENT

- PURCHASE ADDITIONAL 15-20% SOLAR PANELS AT THE OWNER DISCRETION IN ADDITION TO WHAT IS REQUIRED BY PLANS TO ANY FUTURE REPLACEMENTS. PROVIDE ALL UN-USED SOLAR PANELS TO OWNER AT THE END OF THE PROEJCT.

AC PV SYSTEM COMPLIANCE WITH CEC 690 & 705

APPLICABLE REQUIREMENTS:

CEC690.12	:	A RAPID SHUTDOWN REQUIRED TO COMPLY WITH THIS REQUIREMENT. CONTRACTOR MUST SELECT A SOLAR MODULE THAT IS NEC 690.12 UL1741 SA/UL174 LISTED. SOLAR AC MODULE OUTPUT MUST SHUT OFF WITHIN 2 SECONDS OF TURNING OFF THE AC DISCONNECT. COMPLYING WITH IEEE157. IN THIS MANNER ALL WIRING LEAVING EACH AC MODULE COMPLIES WITH 690.12. CURRENTLY PROVIDED SOLAR MODULE COMPLIES WITH THIS REQUIREMENTS
CEC690.31(D)	:	REQUIRED EQUIPMENT TO BE GROUNDED USING 'EQUIPMENT GROUNDING CONDUCTOR'EGC'. CONTRACTOR MUST PROVIDE AN EQUIPMENT GROUNDING CONDUCTROS TERMINATING BACK TO ELECTRICAL PANEL AS SHOWN ON SINGLE LINE/GROUNDING DIAGRAM
CEC690.43		
CEC690.43(A)	:	CONTRACTOR MUST SELECT CLAMPS THAT ARE LISTED IDENTIFIED FOR BONDING & GROUNDING MODULE FRAMES TO RAILES
CEC690.43(B)	:	REQUIRES EQUIPMENT TO BE GROUNDED USING 'EQUIPMENT GROUNIDNG CONDUCTOR-EGC'. CONTRACTOR MUST PROVIDE AN EQUIPMENT GROUNING CONDUCTOR TERMINATING BACK TO ELECTRICAL PANEL AS SHOWN ON SINGLE LINE DIAGRAM
CEC690.45	:	EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED PER TABLE CEC250.122. PROVIDE EQUIPMENT GROUNDING CONDUCTOR AS PER SINGLE LINE DIAGRAM. AS THEY ARE SIZED PER CEC 250.122 TABLE
CEC 690.46	:	ALL EGC SMALLER THAN #6 SHALL RUN IN A RACEWAY. SEE SINGLE LINE DIAGRAM FOR RACEWAY SIZING

PV SYSTEM TESTING REQUIREMENTS PRIOR TO ENERGIZING

1. CONTRACTOR MUST MEASURE THE MAXIMUM OPEN CIRCUIT VOLTAGE ACROSS EACH PV STRING AND PROVIDE STRING VOLTAGE SUBMITTAL TO ENGINEER OF RECORD PRIOR TO CONNECTING THE PV ARRAYS TO THE INVERTER
2. CONTRACOTR TO MEASURE MAXIMUM CIRCUIT CURRENT ACCROSS EACH PV STRING AND PROVIDE CURRENT SUBMITTAL
3. CONTRACTUR MUST PERFORM GROUNDING FAULT TEST FOR PV STRING USING A DC GROUND FAULT DETECTOR & LOCATOR PRIOR TO CONNECTING THE STRING TO THE INVERTER. DO NOT CONNECT PV STRINGS WITH GROUND FAULT TO INVERTER, LOCATE AND CLEAR THE GROUND FAULT
4. CONTRACTOR TO MEASRE AND RECORD AC VOLTAGE AND FREQUENCY. THE TESTED VALUES MUST BE WITHIN PERMISSIBLE RANGE SPECIFIED BY INVERTER MANUFACTURER
5. ALL TESTS MUST ADHERE TO IEC 62446-1:2016/AMD:2018 STANDARD TO ENSURE PERSONNEL SAFETY

INGLEWOOD UNIFIED SCHOOL DISTRICT

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BENNETT-KEW K-8 CAMPUS MODERNIZATION

11710 S Cherry Ave, Inglewood, CA 90303

Date	Issued For
1 11/5/2024	DSA SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER MARK N. CHRISTIAN E 22864 ELECTRICAL STATE OF CALIFORNIA

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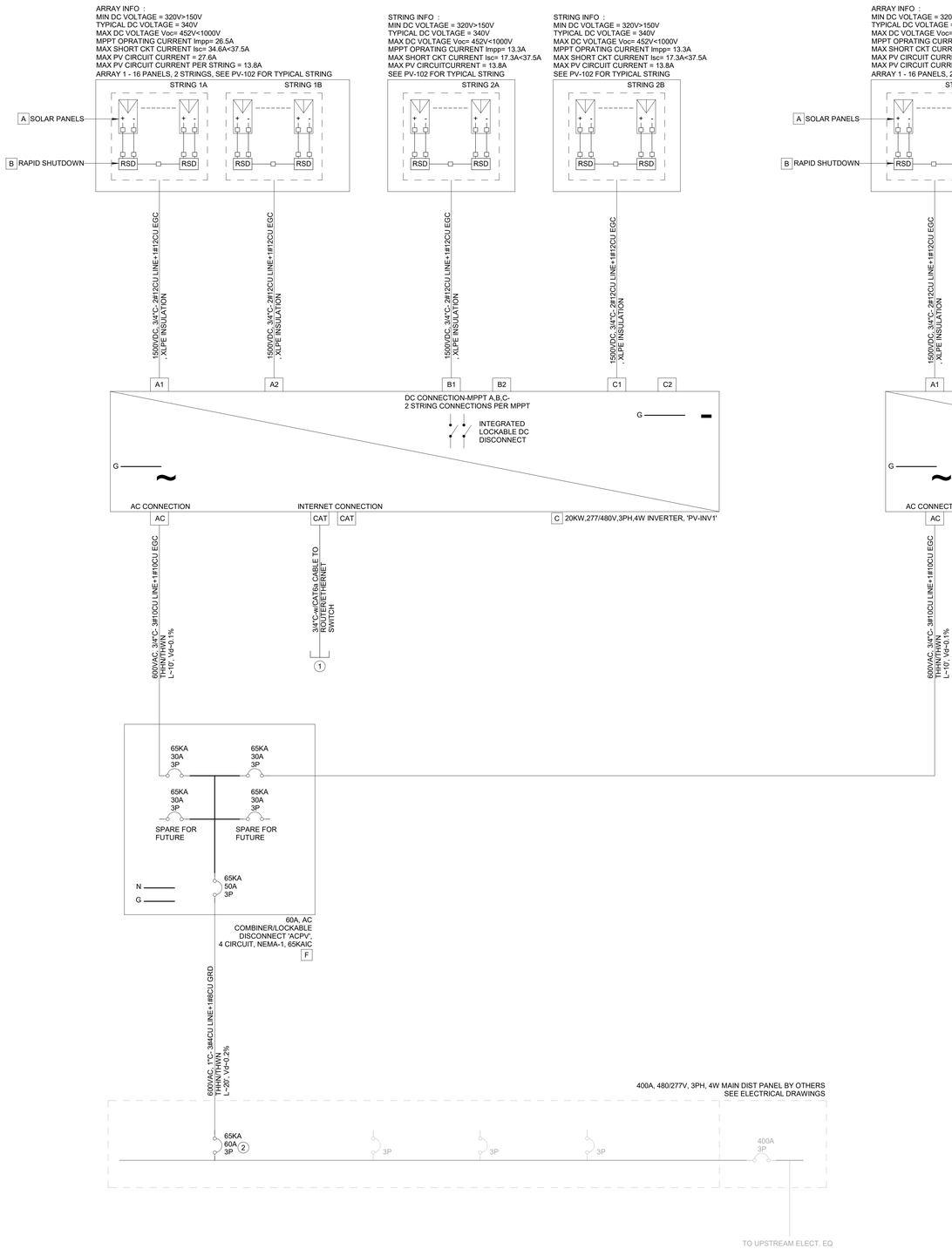
An MBE|SBE|DBE|LSBE Firm
Glendale|Downtown LA|Fremont|Camarillo
W W W . B U D L O N G . C O M
Job No. 23-301

2018-04434-000

PHOTOVOLTAIC FRONT SHEET

PV-001

RSN://lax-rvs01/K12/IUSD/2018-04434-000_BennetKewK-8/2018-04434_Arch_HED.rvt



1 PV SINGLE LINE DIAGRAM
NOT TO SCALE

DATA MANAGER SINGLE LINE DIAGRAM

PV SYSTEM SIZE

STRING NO.	PV PANEL QTY	PANEL KWdc	STRING KWdc
STRING 1A	8	0.605 KWdc	4.84 KWdc
STRING 1B	8	0.605 KWdc	4.84 KWdc
STRING 2A	8	0.605 KWdc	4.84 KWdc
STRING 2B	8	0.605 KWdc	4.84 KWdc
STRING 3A	8	0.605 KWdc	4.84 KWdc
STRING 3B	8	0.605 KWdc	4.84 KWdc
STRING 4A	8	0.605 KWdc	4.84 KWdc
STRING 4B	8	0.605 KWdc	4.84 KWdc
TOTAL	64	---	38.7KWdc

REQUIRED PV SYSTEM SIZE PER TITLE-24 : 29KWdc
PROVIDED PV SYSTEM SIZE : 38.7KWdc

MINIMUM REQUIRED PV PANEL WATTAGES-605WATTS

PV BACKFEED BREAKER SIZING(CEC 705.12(B)(2)(b)

MAXIMUM ALLOWED PV BACKFEED BREAKER SIZE = 1.2xBUSBAR CAPACITY-SERVICE EQUIPMENT MAIN
= 1.2x400A-400A
= 80A
PROVIDED PV BACKFEED BREAKER SIZE = 60A(<MAX ALLOWED)

PV BREAKER TO BE LOCATED AT THE OPPOSITE END OF THE UTILITY FEED, SEE PV SINGLE LINE DIAGRAM. PV BREAKER TO BE PROVIDED BY ELECTRICAL CONTRACTOR, PV CONTRACTOR TO MAKE FINAL CONNECTION. COORDINATE WITH ELECTRICAL CONTRACTOR FOR THE PROVISION OF THE BREAKER PRIOR TO THE BEGINING OF WORK(DURING BIDDING PHASE)

GENERAL NOTES

1. PV FLOOR PLANS ARE FOR CODE COMPLIANCE, GENERAL LOCATION OF EQUIPMENT AND FOR DIAGRAMMATIC PURPOSE ONLY AND SHALL NOT BE USED AS SHOP DRAWINGS, CONTRACTOR MUST PROVIDE INSTALLATION PER MANUFACTURER REQUIREMENTS AND PROVIDE ALL REQUIRED ACCESSORIES FOR A FULLY OPERATIONAL SYSTEM
2. ALL ITEMS SHOWN HERE ARE NEW(N) UNLESS OTHERWISE SHOWN AS EXISTING (E)
3. ALL EQUIPMENT SHALL BE LISTED AND LABELED BY A NATIONALLY RECOGNIZED TESTING LABORATORY AND SHALL BE INSTALLED AS PER LISTING OR LABELING.
4. ALL DEVICES AND TERMINALS SHALL BE RATED FOR 90°C AND SHALL BE TORQUED TO MANUFACTURERS LISTED SPECIFICATIONS.
5. EQUIPMENT/ DEVICES AND TERMINATIONS ARE RATED FOR 90°C AND FOR USE WITH 75° RATED CONDUCTORS.
6. ALL UG CONDUITS SHALL BE PVC SCH 40, COVER DEPTH 30" OR PER CEC TABLE 300.5
7. ROOFTOP CONDUITS EXPOSED TO SUN SHALL BE SUNLIGHT/UV RESISTANT
8. PROVIDE REQUIRED JUNCTION BOXES/PULL BOXES AS NEEDED WHERE CONDUIT BENDS EXCEED 360 DEGREE IN TOTAL BETWEEN TWO PULL POINTS(PULL BOXES, JUNCTION BOXES, CONDUIT BODIES)

KEYNOTES

#	
1	CONNECT THE CAT6 CABLE TO INTERNET NETWORK ROUTER OR ETHER SWITCH. COORDINATE WITH DISTRICT 'IT' OFFICIAL FOR THE EXACT CONNECTION POINT PRIOR TO THE BEGINING OF THE PROJECT
2	CONNECT TO THE PV BACKFEED BREAKER IN THE SWITCHBOARD, BREAKER TO BE PROVIDED BY ELECTRICAL CONTRACTOR
3	ROUTE THE CONDUCTORS AND CONDUITS TO 120VAC ELECTRICAL PANEL. COORDINATE WITH ELECTRICAL CONTRACTOR FOR EXACT LOCATION OF POWER SOURCE AND PROVISION OF 20A/1P, 120VAC BREAKER FOR THE DATA MANAGER POWER. FINAL CONNECTION OF CONDUCTORS TO THE BREAKER SHALL BE BY ELECTRICAL CONTRACTOR. COORDINATE WITH ELECTRICAL CONTRACTOR FOR THE PROVISION OF POWER PRIOR TO THE BEGINNING OF WORK(DURING BIDDING PHASE)

EQUIPMENT/PARTS LIST

#	
A	SOLAR PANELS-HANWHA Q.CELLS-Q.PEAK DUO XL-G11S.3/BFG 605
B	RAPID SHUT DOWN-AP SMART-RSD-D-20. PROVIDE 20APV CABLE-426101 AND 20AMC4 PV CONNECTORS-446101, FOR EACH RAPIDSHUT DOWN DEVICE
C	INVERTER-SMA-SUNNY TRIPOWER X 20-US
D	SMA-DATA MANAGER M-EDMM-US-10
E	100W 24VDC POWER SUPPLY-EATON-PSL100E24RP
F	AC COMBINER-TERRA SMART SOLAR BOS

EQUIPMENT NOTES :
1. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER INSTALLATION REQUIREMENTS, PROVIDE ALL REQUIRED ACCESSORIES , INCLUDING PV CONNECTORS, CABLES FOR A FULLY OPERATIONAL SYSTEM
2. INVERTER MUST INCLUDE AN INTEGRATED SUNSPEC-CERTIFIED RAPID SHUTDOWN TRANSMITTER, IN THE ABSENSE OF INTEGARTED PLC TRANSMISSTER INCLUDE AN EXTER NAL TRANSMITTER-PLC PER INVERTER AND INSTALL PER RAPID SHUT DOWN INSTALLATION MANUAL
3. INVERTER TO BE PROVIDED WITH SMA SHADE FIX OPTIMIZATION SOFTWARE
4. AT THE END OF INSTALLATION OF THE PV SYSTEM CONTRACTOR MUST INSTALL ALL REQUIRED SOFTWARES IN BUILDING ADMIN COMPUTER, ENERGIZE AND COMMISION THE SYSTEM
5. MOUNT INVERTER PER INSTALLATION MANUAL REQUIREMENTS, PROVIDE WOOD BLOCKING AND ALL REQUIRED ACCESSORING FOR MOUNTING

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BENNETT-KEW K-8 CAMPUS MODERNIZATION

11710 S Cherry Ave, Inglewood, CA 90303

Date	Issued For
1 11/5/2024	DSA SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER MARK W. CHRISTIAN E 22864 ELECTRICAL STATE OF CALIFORNIA

DSA A# 03-124773 FILE # 19-48

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2018-04434-000

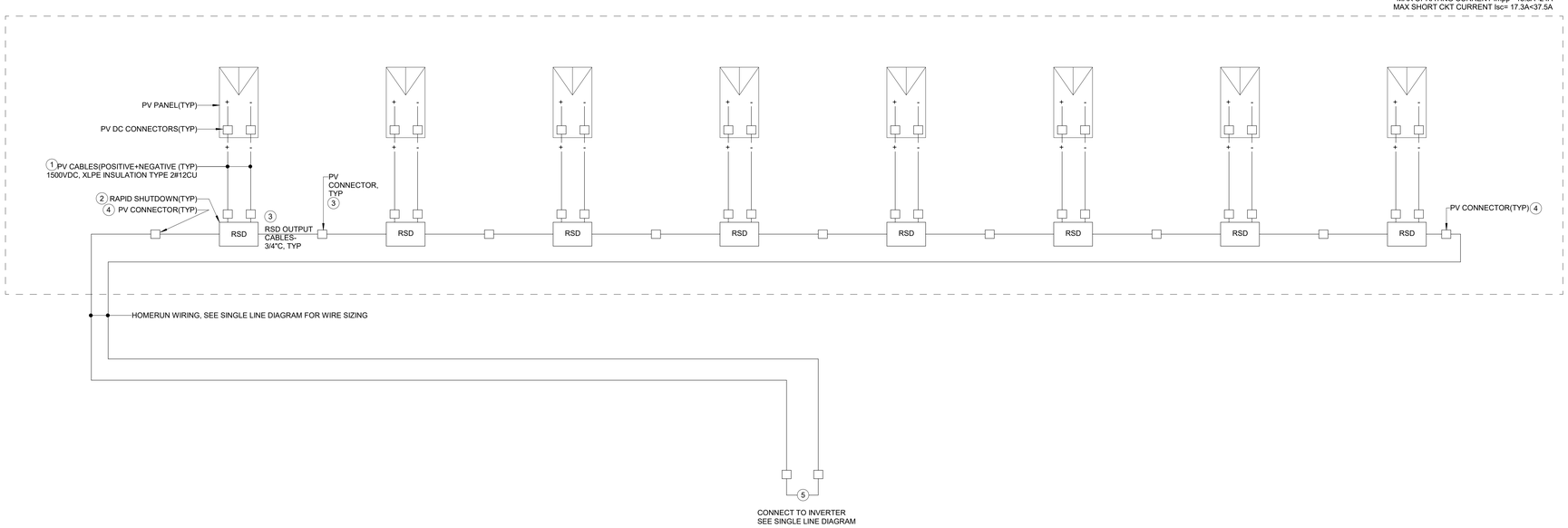
PV SINGLE LINE DIAGRAM

PV-101

4/7/2025 9:54:34 AM

TYPICAL PV STRING

STRING INFO :
8 PANELS PER STRING
TYPICAL STRING VOTAGE Vmpp = 511V
NOMINAL(MIN)STRING VOLTAGE = 479V>188V
MAX STRING VOLTAGE Voc= 678V<1000V
MAX OPRATING CURRENT Impp= 13.3A<24A
MAX SHORT CKT CURRENT Isc= 17.3A<37.5A



1 ENLARD PV SYSTEM DIAGRAMS
NOT TO SCALE

GENERAL NOTES

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5. EQUIPMENT/ DEVICES AND TERMINATIONS ARE RATED FOR 90°C AND FOR USE WITH 75° RATED CONDUCTORS.
6. ALL UG CONDUITS SHALL BE PVC SCH 40, COVER DEPTH 30" OR PER CEC TABLE 300.5
7. ROOFTOP CONDUITS EXPOSED TO SUN SHALL BE SUNLIGHT/UV RESISTANT
8. PROVIDE REQUIRED JUNCTION BOXES/PULL BOXES AS NEEDED WHERE CONDUIT BENDS EXCEED 360 DEGREE IN TOTAL BETWEEN TWO PULL POINTS(PULL BOXES, JUNCTION BOXES, CONDUIT BODIES)

KEYNOTES

#	
1	CONNECT ALL PV MODULES AND RAPID SHUT DOWNDEVICES USING PV DC CONNECTORS(MALE & FEMALE), CONNECT WIRING PER MFR INSTALLATION MANUAL
2	WHEN CONNECTING THE RAPID SHUTDOWN(RSD-D) TO ONLY ONE PV MODULE, USE INPUT1 PORT ONLY. THEN CONNECT A DC EXTENSION CABLE TO BOTH TERMINALS OF INPUT 2 TO SHORT THE CONNECTION, TO SAFELY OPERATE THE RAPID SHUTDOWN DEVICE. DO NOT SHORT-CIRCUIT THE RSD(RSD STRING) OUTPUT CABLE
3	CABLES AND CONNECTORS TO BE PROVIDED WITH RSD DEVICE
4	PROVIDE MC4 PV CONNECTOR-1500VDC MALE AND FEMALE CONNECTOR TO CONNECT HOMERUN WIRING TO RSD PV CABLES
5	MEASURE THE VOLTAGE BETWEEN EACH STRING. CONTRACTOR MUST PROVIDE THE STRONG VOLTAGE SUBMITTAL TO ENGINEER OF RECORD FOR THE REVIEW PRIOR TO CONNECTING THE PV STRINGS TO INVERTER

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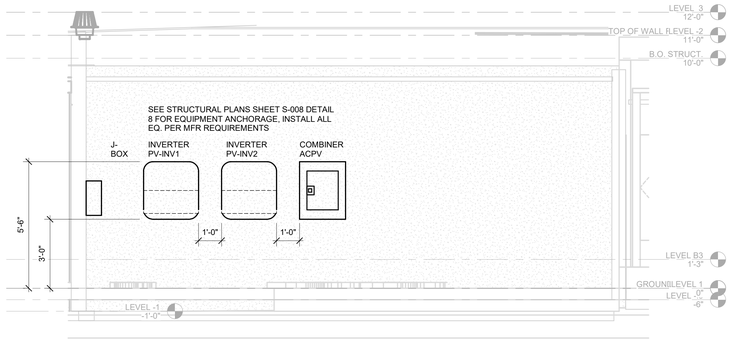
ENLARGED PV DIAGRAMS

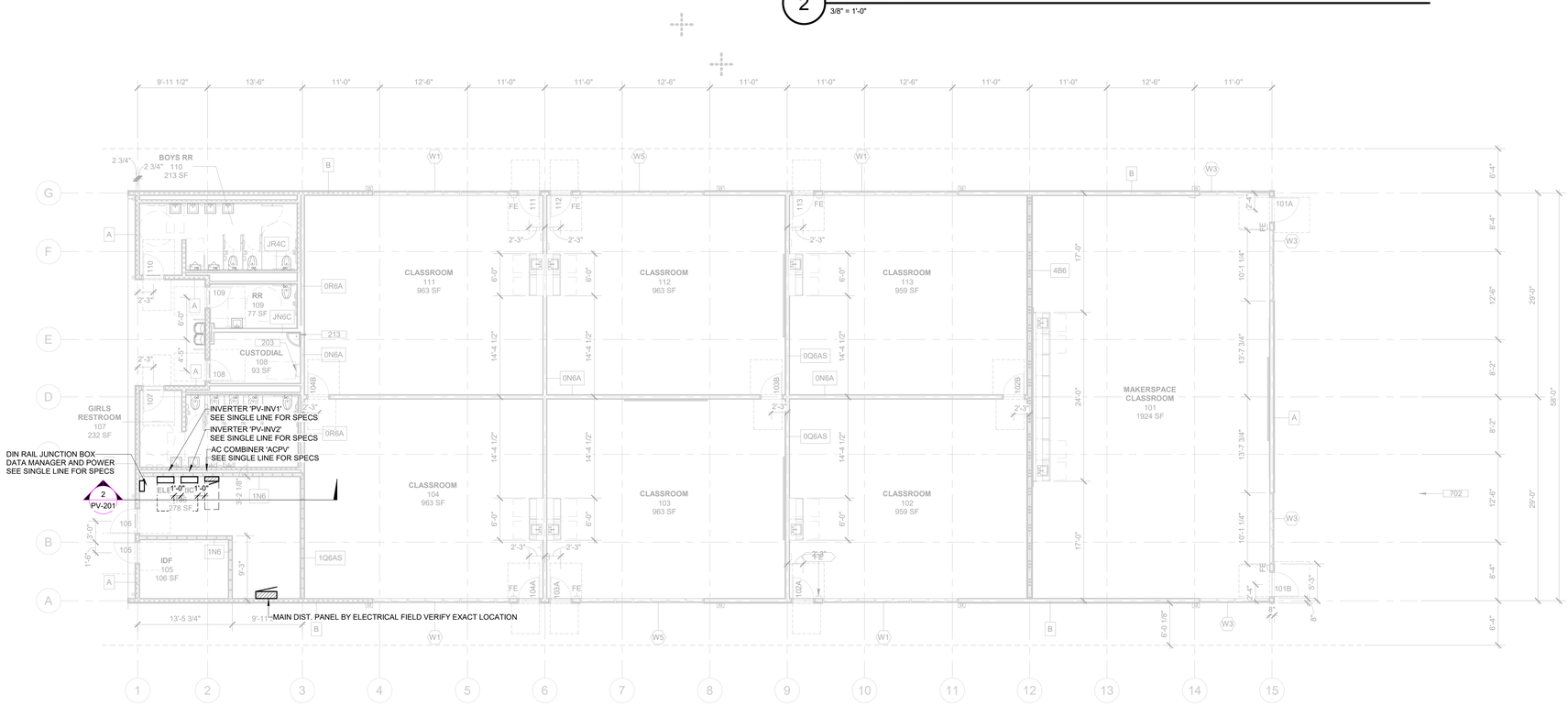
PV-102

RSN://lax-vs01/K12/IUSD/2018-04434-000_BennetKewK-8/2018-04434_Arch_HED.rvt



2 PV EQ. ELEVATION

3/8" = 1'-0"



1 ELECTRICAL PV NEW BUILDING FIRST FLOOR PLAN

1/8" = 1'-0"

GENERAL NOTES

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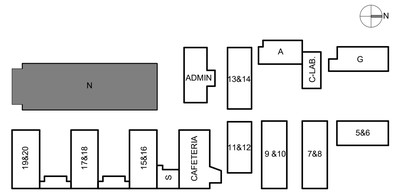
9. SOLAR PANELS ARE TO BE LISTED AND LABELED IN ACCORDANCE WITH UL 61730-1 AND UL67130-2 PER CBC 1511.9
10. THE OWNER'S SITE PROFESSIONAL SHALL PROVIDE PRODUCT DOCUMENTATION FROM THE SOLAR PANEL SUPPLIER, INCLUDING PANEL DIMENSIONS AND LOAD RATINGS, TO THE DESIGN PROFESSIONAL FOR REVIEW PRIOR TO SUBMITTAL TO DSA FOR PLAN REVIEW
11. MOUNTING OF PV SYSTEM AND RELATED EQ. SHALL BE PER STRUCTURAL DRAWINGS. SEE STRUCATURAL PLANS SHEETS S-008 AND S-009 FOR PV STRUCTURAL AND FRAMING REQUIREMENTS

KEYNOTES

KEY PLAN



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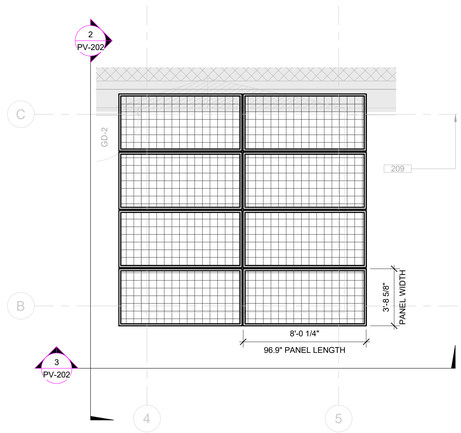
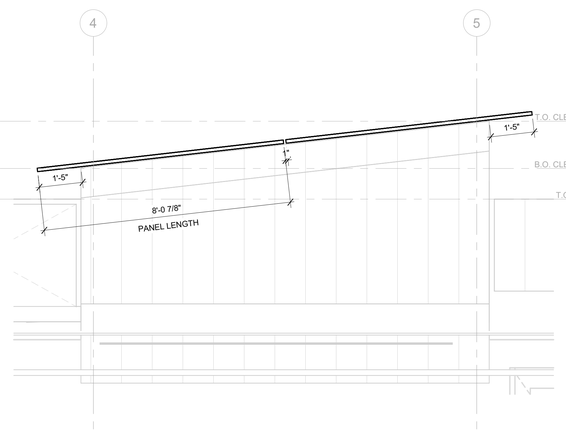
ELECTRICAL PV NEW BUILDING FIRST FLOOR PLAN

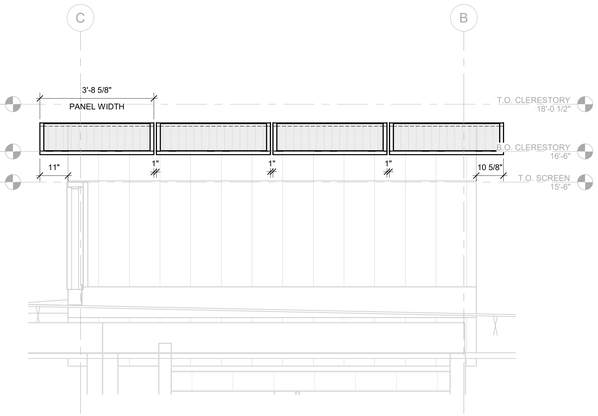
PV-201



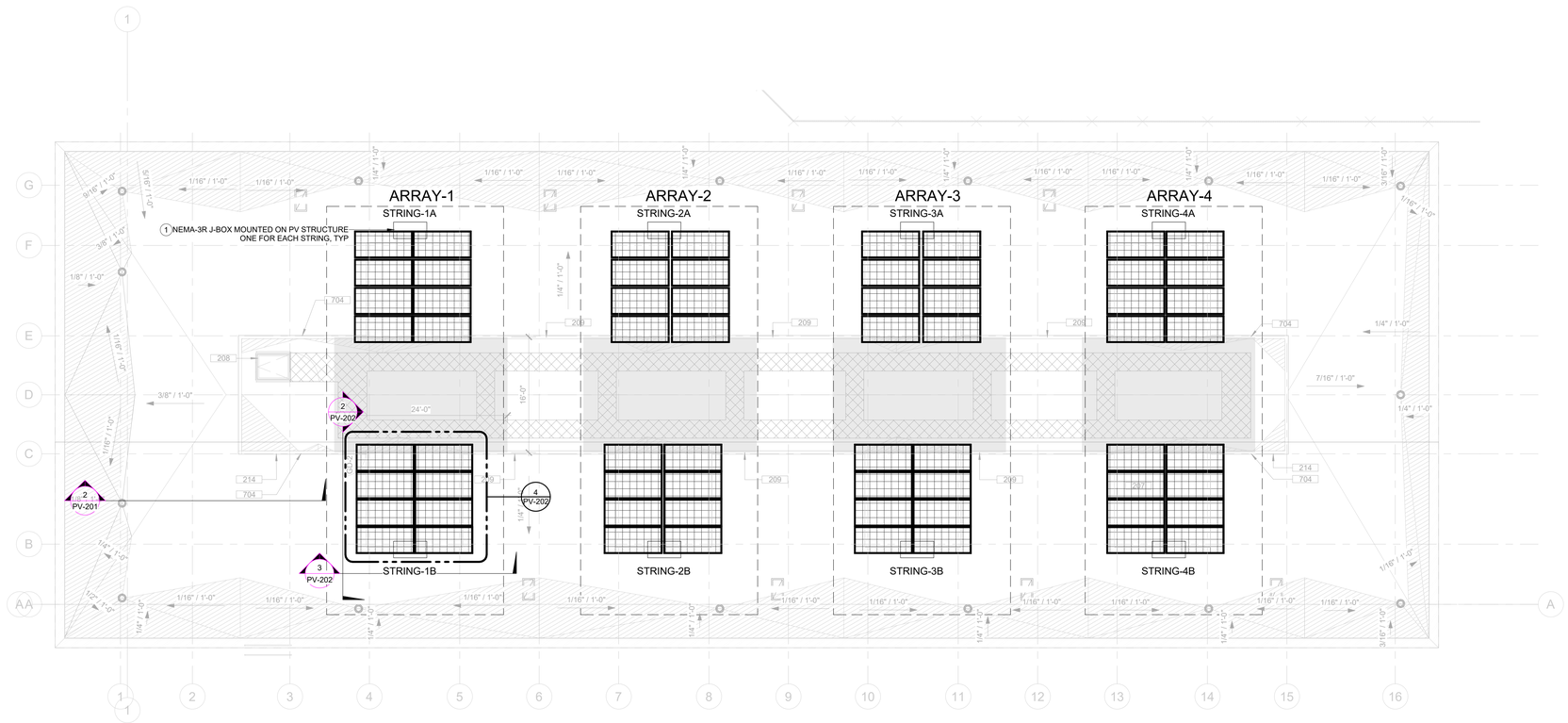
4 PV ARRAY ENLARGED PLAN
1/4" = 1'-0" PV-202



3 PV ARRAY SECTION-1
1/2" = 1'-0" PV-202



2 PV ARRAY SECTION-2
1/2" = 1'-0" PV-202



1 ELECTRICAL PV NEW BUILDING ROOF PLAN
1/8" = 1'-0"

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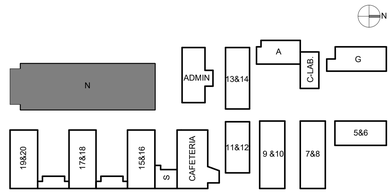
10. THE OWNER'S SITE PROFESSIONAL SHALL PROVIDE PRODUCT DOCUMENTATION FROM THE SOLAR PANEL SUPPLIER, INCLUDING PANEL DIMENSIONS AND LOAD RATINGS, TO THE DESIGN PROFESSIONAL FOR REVIEW PRIOR TO SUBMITTAL TO DSA FOR PLAN REVIEW
11. MOUNTING OF PV SYSTEM AND RELATED EQ. SHALL BE PER STRUCTURAL DRAWINGS. SEE STRUCATURAL PLANS SHEETS S-008 AND S-009 FOR PV STRUCTURAL AND FRAMING REQUIREMENTS

KEYNOTES

#	
1	NEMA-3R J-BOX FOR PV STRING WIRING, MOUNT THE J-BOX ON PV STRUCTURE. FIELD VERIFY EXACT LOCATION AND SIZING OF THE J-BOX

KEY PLAN



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REGISTERED PROFESSIONAL ENGINEER MEGAN N. CHRISTIAN E 22864 ELECTRICAL STATE OF CA

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ELECTRICAL PV NEW BUILDING ROOF PLAN

PV-202

4/7/2025 9:54:37 AM

MAXIMUM DC VOLTAGE OF PV SYSTEM

NEC 2023 : 690.7(D)
LOCATION :
ONE OF THE FOLLOWING
1. DC PV DISCONNECTING MEANS
2. PV SYSTEM ELECTRONIC POWER CONVERSAION EQUIPMENT
3. DISTRIBUTION EQUIPMENT ASSOCIATED WITH PV SYSTEM

PV SYSTEM DC DISCONNECT

NEC 2023 : 690.13(B)
LOCATION : DC COMBINER/DISCONNECT, INVERTER WITH INTEGRATED DC CONNECT

PV SYSTEM DC DISCONNECT

MAXIMUM POWER POINT VOLTAGE(Vmp): V
MAXIMUM POWER POINT CURRENT(Imp): A
MAXIMUM SYSTEM VOLTAGE(Voc) V
SHORT-CIRCUIT CURRENT(Isc) A

NEC 2020 : 690.53
LOCATION : INVERTER(S), DC DISCONNECT(S)

DC PV CIRCUIT LABELS SCALE NTS 7

INVERTER 'XXX'

KVA RATING V
NUMBER OF STRINGS A
MODULES PER STRING V

SPECS :
LABELS : LAMACOID ENGRAVED
PLATE : PLASTIC PLATE w/ADHESIVE BACK & HOLES IN ALL CORNERS, WEATHER PROOF FOR EXTERIORS, ALUMINUM FOR HAZARDOUS AREAS
BACKGROUND : BLACK OR BLUE
FONTS : 3/8"(27pt) MIN., AERIAL, WHITE, CENTERED

DISCONNECT 'XXX'

XXXA, XXX/XXXV, XPH, XW

J-BOX 'XXX'

CKT PANEL X-XX,XX,XX

NOTES :
1. CONTRACTOR TO USE AMP, VOLT, PHASE, WIRE, KVA, EQ. LABEL NAME AS NOTED PER PLANS FOR TAGS

EQUIPMENT TAGS SCALE NTS 9

NOTES AND SPECIFICATIONS:

1. SIGNS AND LABELS SHALL MEET THE REQUIREMENTS OF THE NEC 2020 ARTICLE 110.21(B), UNLESS SPECIFIC INSTRUCTIONS ARE REQUIRED BY SECTION 690, OR IF REQUESTED BY THE LOCAL AHJ.
2. SIGNS AND LABELS SHALL ADEQUATELY WARN OF HAZARDS USING EFFECTIVE WORDS, COLORS AND SYMBOLS.
3. LABELS SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HAND WRITTEN.
4. LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
5. SIGNS AND LABELS SHALL COMPLY WITH ANSI Z535.4-2011, PRODUCT SAFETY SIGNS AND LABELS, UNLESS OTHERWISE SPECIFIED.
6. DO NOT COVER EXISTING MANUFACTURER LABELS.
7. PV SYSTEM DC CIRCUIT CONDUCTORS SHALL BE IDENTIFIED AT ALL TERMINATION, CONNECTION AND SPLICE POINTS BY COLOR CODING, MARKING TAPE, TAGGING OR OTHER APPROVED MEANS IN ACCORDINANCE WITH 690.31(B)(2)(a) AND (B)(2)(b)

NOTES AND SPECIFICATIONS SCALE NTS 8

⚠ WARNING ⚠

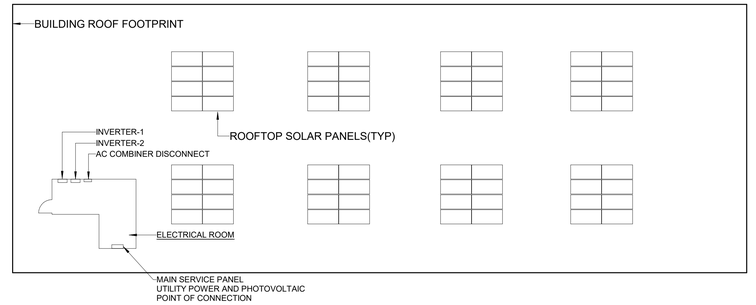
POWER SOURCE OUTPUT CONNECTION

DO NOT RELOCATE THIS OVERCURRENT DEVICE

NEC 2020 : 705.12(B)(3)(2)
LOCATION :
ON THE SWITCBOARD CONTAINING BACKFEED PV BRFEAKER, ADJACENT TO PV BREAKER

PV AC CIRCUIT BREAKER IN SWITCHBOARD SCALE NTS 6

CAUTION!
POWER TO THIS BUILDING SUPPLIED FROM MULTIPLE SOURCE



DC PV CIRCUIT MARKINGS SCALE NTS 5

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Date	Issued For
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FONT HEIGHT-3/8" MINIMUM

WARNING : SOLAR PV DC CIRCUIT

OR

FONT HEIGHT-3/8" MINIMUM

WARNING : PHOTOVOLTAIC POWER SOURCE

NEC 2023 : 690.31(D)(2)
LOCATION(ONLY FOR DC CIRCUITS)
1. EXPOSED RACEWAYS, CABLE TRAYS AND DC WIRES
2. COVERS OR ENCLOSURES OF PULL BOXES AND JUNCTION BOXES
3. CONDUITS BODIES IN WHICH ANY OF THE AVAILABLE CONDUIT OPENINGS ARE UNUSED
4. COMBINER BOXES, DISCONNECTS

REQUIREMENTS:
1. THE LABELS OR MARKINGS SHALL BE VISIBLE AFTER INSTALLATION. ALL LETTERS SHALL BE CAPITALIZED AND SHALL BE MINIMUM HEIGHT OF 3/8" IN WHITE OR A RED BACKGROUND
2. LABELS SHALL APPEAR ON EVERY SECTION OF THE WIRING SYSTEM THAT IS SEPERATED BY ENCLOUSRES, WALLS, PARTITIONS, CEILINGS OR FLOORS.
3. SPACING BETWEEN LABELS OR MARKINGS OR BETWEEN A LABEL AND A MARKING SHALL NOT BE MORE THAN 3FT.
4. LABELS REQUIRED SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE THEY ARE INSTALLED

DC POWER SOURCE LABEL SCALE NTS 4

⚠ WARNING ⚠

ELECTRICAL SHOCK HAZARD

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

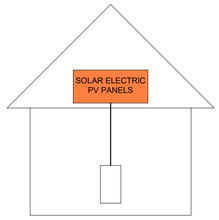
NEC 2023 : 690.13(B)
LOCATION :
AT THE INVERTER WITH INTEGRATED DISCONNECT, AC DISCONNECT/COMBINER(ONLY WHERE INVERTER IS NOT(GRID TIED), DC DISCONNECT/COMBINER

SHOCK HAZARD WARNING LABEL SCALE NTS 3

FONT HEIGHT-3/8" MINIMUM

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



NEC 2023 : 690.12(D)
LOCATION : LABEL LOCATED AT EACH SERVICE EQUIPMENT LOCATION TO WHICH PV SYSTEMS ARE CONNECTED

RAPID SHUTDOWN PV LABEL SCALE NTS 2

PV SYSTEM AC DISCONNECT

MAXIMUM AC OPERATING CURRENT :
MAXIMUM AC OPERATING VOLTAGE :

NEC 2023 : 690.13(B)
LOCATION : AC COMBINER/DISCONNECT

PV AC DISCONNECT LABELS SCALE NTS 1

FONT HEIGHT-3/8" MINIMUM

RAPID SHUT DOWN SWITCH FOR SOLAR PV SYSTEM

NEC 2023 : 690.12(D)
LOCATION : AT THE RAPID SHUT DOWN INITIATION DEVICE.
FOR INVERTER WITH INTEGRATED SUBSPEC RAPID SHUTDOWN FUNCTION, AC DISCONNECT/COMBINER ACTS AS THE INITIATION DEVICE

RAPID SHUTDOWN PV LABEL SCALE NTS 1

REGISTERED PROFESSIONAL ENGINEER MARIA N. CHRISTYAKOV No. E 22864 ELECTRICAL STATE OF CALIFORNIA

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PV LABEL SET REQUIREMENTS

PV-301

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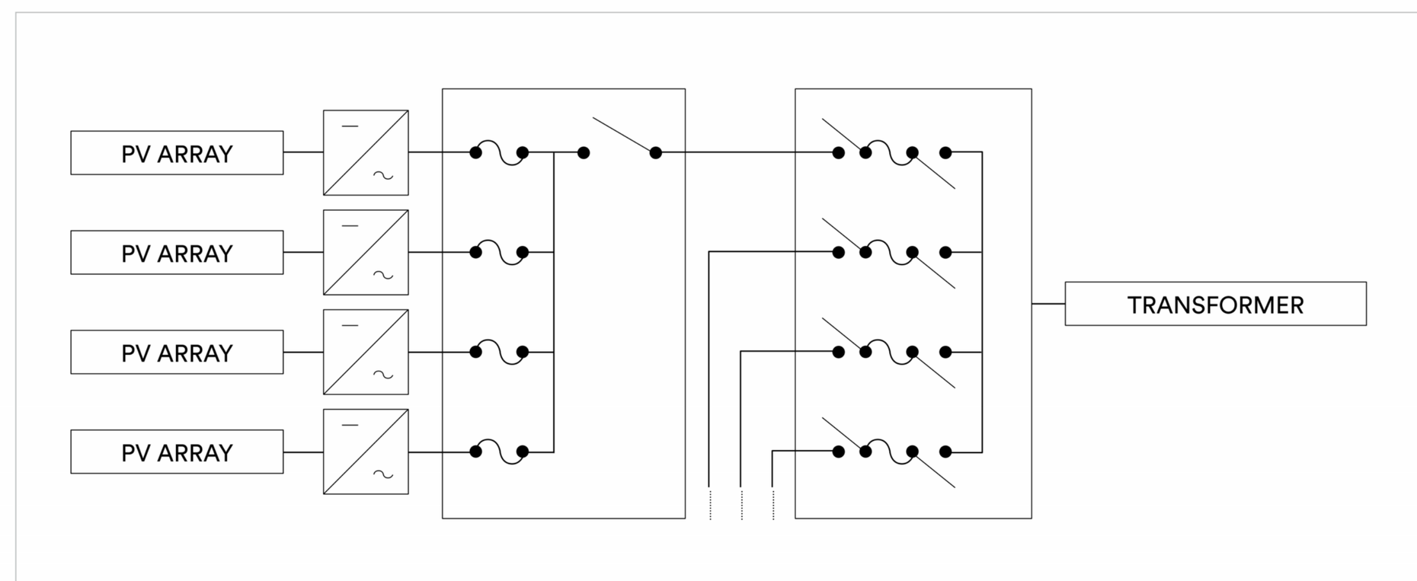
terrasmart



Secondary AC Combiners are typical for sites where further agreggation of AC Combiners is needed.

Product features
- Listed to UL-508A
- 600 VAC
- 200 kAIC
- 2 to 16 input circuits
- 35A to 800A fuse sizes

Available options
- Integrated output or input disconnect switch(es)
- Neutral terminals
- Transient surge suppression
- Auxiliary breakers
- Convenience receptacles
- Breather and drain vents
- Padlockable enclosures
- NEMA-3R/4 or 4X rated enclosure options
- Custom solutions available upon request

Specifications

Fuse Sizes (Amps)	35 A to 60 A		70 A to 800 A	
Disconnect(s)	None	Output Disconnect	None	Input Disconnect(s)
Disconnect Ampacity	N/A	200A / 400A / 600A / 800A	N/A	200A / 400A / 600A / 800A
Number of Input Circuits	2 to 12	2 to 12	2 to 16	2 to 16
Input Conductor Size (AWG)	#14-2	#14-2	#6 to 350 / #2 to 600	#6 to 350 / #2 to 600
Max Output Current	200A / 400A / 600A / 800A	200A / 400A / 600A / 800A	1280 A / 2560 A	1280 A / 2560 A
Voltage (VAC)	600 VAC 3 Φ	600 VAC 3 Φ	600 VAC 3 Φ	600 VAC 3 Φ
Neutrals	Optional	Optional	Optional	Optional
Output Conductor Size Range (AWG)	#6 to 350 / #2 to 600	#6 to 350 / #2 to 600	#2 to 600	#2 to 600
Typical Enclosure Dimensions (Inches)	20×20×8	30×24×8	36×36×8	60×36×12
Enclsoure NEMA Ratings	3R, 4, 4X	3R, 4, 4X	3R, 4, 4X	3R, 4, 4X

* Other options available upon request. Please note dimensions and weight may vary for any custom solutions. Contact us for details.

www.terrasmart.com | info@terrasmart.com

AC Combiners

terrasmart

SolarBOS AC Combiners provide cost effective means to combine AC equipment. Individual fused inputs facilitate string inverter output aggregation. SolarBOS AC Combiners support all string inverters and are highly configurable to fit any application.

Benefits

Better Performance
- Our AC Combiner incorporates fuses which are bi-directional, therefore back feeding is not a concern. Breaker panels are typically designed for load applications and when they are used "backwards" for supply equipment the breakers must be back feed capable.
- Custom output busses allow direct and convenient connection to the transformer.
- Outdoor rated enclosures can be mounted on their back, reducing shading and racking requirements.
- Fuses are better suited to perform in higher temperature environments vs. breakers which often need to be oversized to avoid inconvenient nuisance trips.
- Designed for supply as opposed to load applications. In solar applications, loads are not variable and sources are current limited.

More Reliable
- Fuses are more reliable and maintain 100% operation; while breakers degrade every time they trip or are used as a disconnect, requiring maintenance to ensure they function properly.
- Fuse coordination ratios easily ensure the OCPD trips if an overcurrent event takes place. However, breakers require a more complicated study involving trip curves and are more difficult to replace.
- Current limiting fuses reduce arc flash energy and the level of PPE require for servicing.

Save Time and Money
- Many string inverters include load break disconnecting means. This allows the use of non-load break fuseholders to isolate inverters and realize significant cost savings.
- Fuses offer a high interrupt rating as a standard (commonly 200kAIC), while breakers' cost increases with the need for higher interrupt rating.

AC Combiner, 600 VAC, 4 input circuits, 200A output disconnect, NEMA-4 steel enclosure

AC Combiner, 600 VAC, 4 input circuits, 400A fused input disconnects, NEMA-4 steel enclosure

www.terrasmart.com | info@terrasmart.com

AC COMBINER

Technical data	Sunny Tripower X 20-US	Sunny Tripower X 25-US	Sunny Tripower X 30-US
Input (DC)			
Maximum PV array power	30000 Wp	37500 Wp	45000 Wp
Maximum input voltage		1000 V	
MPP voltage range	350 V to 800 V	430 V to 800 V	515 V to 800 V
Minimum input voltage / initial input voltage		150 V / 188 V	
Maximum operating input current / short-circuit current per MPP tracker		24 A / 37.5 A	
Number of independent MPP trackers / string inputs per MPP tracker		3 / 2	
Output (AC)			
Nominal output power	20000 W	25000 W	30000 W
Maximum apparent power	20000 VA	25000 VA	30000 VA
Nominal AC voltage		480 V / 277 V	
AC voltage range		244 V to 305 V	
Rated grid frequency / range		60 Hz / 50 Hz to 66 Hz	
Maximum output current	24 A	30 A	36 A
Power factor at rated power / adjustable displacement		1 / 0.8 overexcited to 0.8 underexcited	
Output phases / line connection		3 / 3-(N)-PE	
Harmonics (THD)		< 3 %	
Efficiency			
CEC efficiency	97.5 %	98 %	98 %
Protection and safety features			
Load rated DC disconnect		●	
Ground fault monitoring / grid monitoring		● / ●	
DC reverse polarity protection / AC short-circuit protection		● / ●	
All-pole sensitive residual-current monitoring unit		●	
Protection class / overvoltage category		I / III	
DC AFCI arc-fault protection		●	
SunSpec PLC signal for rapid shutdown		●	
DC surge protection type 2 / DC surge arrester type 1+2		○ / ○	
General data			
Dimensions (W/H/D)		728 mm / 762 mm / 266 mm (28.7 in / 30 in / 10.5 in)	
Device Weight		35 kg / 77 lbs	
Operating temperature range		-25°C to +60°C (-13°F to +140°F)	
Noise emission (typical)		59 dB(A)	
Topology / cooling concept		Transformerless / OptiCool (forced convection, variable speed fans)	
Enclosure protection rating		Type 4X (as per UL 50E)	
Corrosivity classification according to IEC 61701		C5*	
Maximum permissible value for relative humidity (non-condensing)		100 %	
Features / functions / accessories			
Mounting type		Vertical rack / wall mount to 15° from horizontal	
DC connection / AC connection		Amphenol H4 Plus / spring-cage terminal	
LED indicators (status / fault / communication)		●	
Network interfaces: Ethernet / WLAN		● (2 ports) / ●	
Data protocols: SMA Modbus / SunSpec Modbus / Speedwire		● / ● / ●	
Multi-function relay / Extension module slot / Digital inputs		● / ● / ● (6 inputs)	
SMA ShadeFix string level optimization		●	
Integrated I-V curve diagnostics 1)		●	
Integrated Plant Control / Q on Demand 24/7		● / ●	
SMA Smart Connected (proactive monitoring and service support)		●	
Standard warranty		10 years	
Optional warranty extensions (total warranty coverage cannot exceed 20 years)		+5 years, +10 years	
Certificates and approvals			
Certificates and approvals		UL 62109-1, UL 1699B Ed. 1, CAN/CSA 22.2 No. 62109-1:16 / 62109-2:16, PV Rapid Shutdown System Equipment in accordance with UL1741:2021	
FCC compliance		FCC Part 15 Class A	
Grid interconnection standards		UL 1741 SB, IEEE 1547:2018, compliance to SRDs: CA Rule 21, HECO Rule 14H, ISO-NE	
Integrated System Manager			
Maximum number of supported inverters / energy meters		5 / 1	
Maximum system power PV inverters (nominal AC power)		150 kVA	
Centralized commissioning of all devices in the system		●	
Remote parameterization of SMA devices		● (via Sunny Portal powered by ennexOS)	
SMA Dynamic Power Control (e.g. zero export / Volt-VAr) 2)		○	
Type designation	STP 20-US-50	STP 25-US-50	STP 30-US-50

● Standard features ○ Optional – Not available Data in nominal conditions Last revision: 08/2023 *≥ 500 m from the coast 1) Upcoming 2) Currently free software

Accessories
- SMA Data Manager M EDMM-US-10
- DC terminal cover DC-TERM-COVER
- SMA Sensor Module MD.SEN-US-40
- DC Surge Protection Kits T2: DC_SPD_KIT6-10 T1+2: DC_SPD_KIT7_T1T2

Toll Free +1 888 4 SMA USA
www.SMA-America.com

SMA America, LLC

/ STP 20-US-50 / STP 25-US-50 / STP 30-US-50

SMA

Sunny Tripower X-US

20 / 25 / 30

Integrated intelligence for future-proof system design.

powered by ennexOS

SMA Smart Connected SMA ShadeFix

Integrated System Manager
- Monitoring and control for up to 5 inverters (max. 150 kVA)
- Remote access with Sunny Portal powered by ennexOS
- SMA Dynamic Power Control

Enhanced safety
- Integrated SunSpec PLC signal for module-level shutdown
- Advanced DC AFCI arc-fault protection
- Optional DC type 2 and type 1+2 surge protection

Maximum yields
- Three MPP trackers for flexible array design
- SMA ShadeFix string level optimization
- Integrated I-V curve diagnostics 1)

Smart monitoring, control and service
- SMA Smart Connected proactive monitoring and service solution
- SMA ennexOS cross-sector energy management platform
- Centerpiece of the proven SMA Energy System Business

Sunny Tripower X is the new innovative inverter solution for commercial PV systems.

Providing three MPP trackers with SMA ShadeFix string optimization technology for optimal PV array design flexibility and maximum energy yields. SMA's proven integrated rapid shutdown support and reliable DC AFCI arc-fault protection ensure enhanced system safety. And now with the new integrated System Manager, powered by SMA's ennexOS cross-sector energy management platform, Sunny Tripower X becomes the centerpiece of the SMA Energy System Business for comprehensive commercial energy systems now and in the future.

1) upcoming

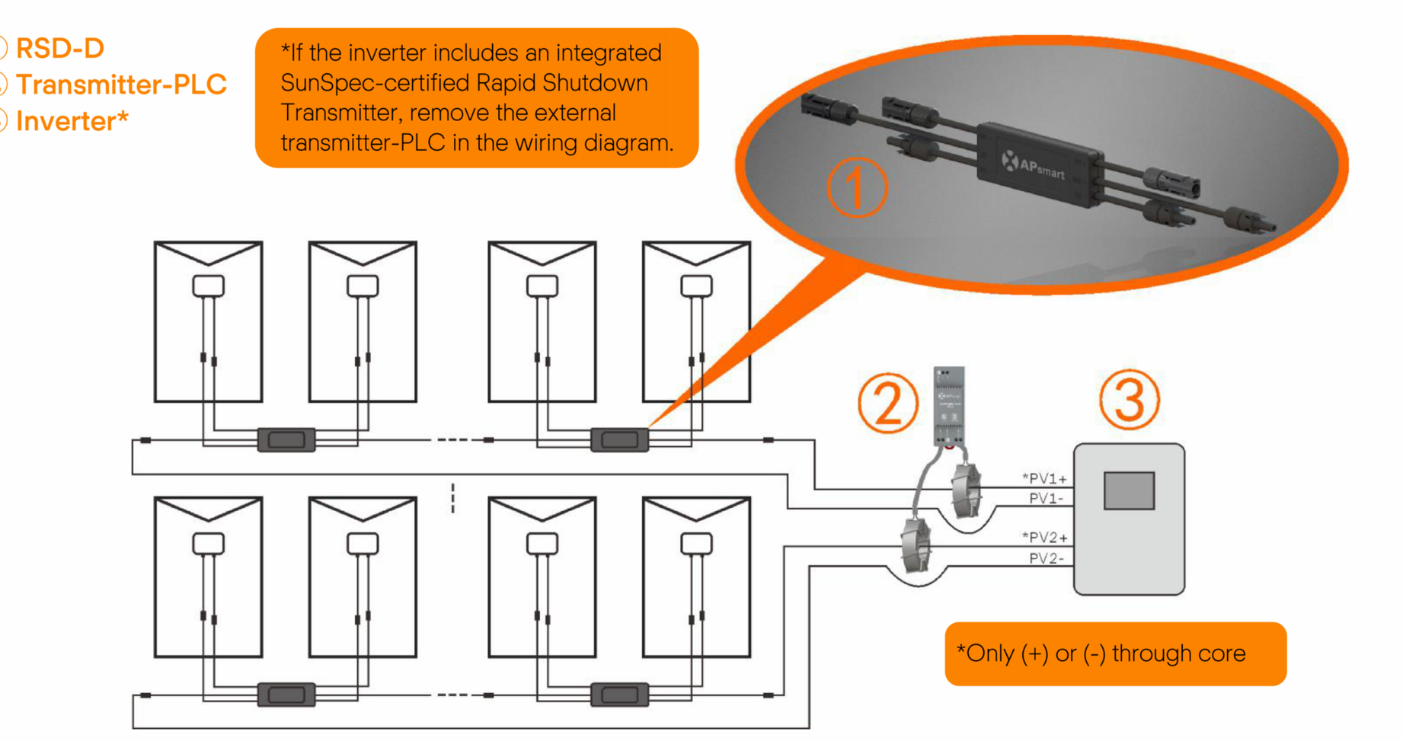
SOLAR INVERTERS

APsmart

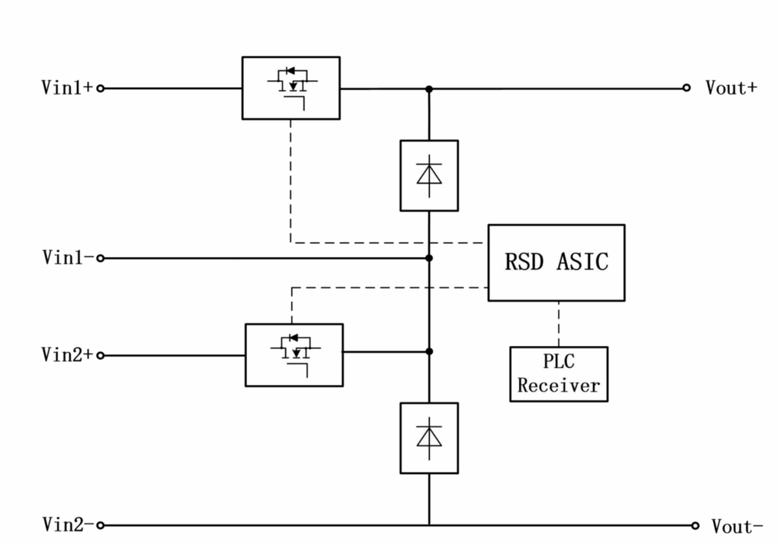
RSD-D WIRING DIAGRAM

① RSD-D
② Transmitter-PLC
③ Inverter*

*If the inverter includes an integrated SunSpec-certified Rapid Shutdown Transmitter, remove the external transmitter-PLC in the wiring diagram.



WORKING SCHEMATIC DIAGRAM



ORDERING INFORMATION

426101	1500V UL/1000V TUV, 15A, 2.2m cable, Stäubli MC4 PV-KBT4&KST4
446101	1500V UL/1000V TUV, 20A, 2.2m cable, Stäubli MC4 PV-KBT4&KST4
4261xx*	15A, 2.2m cable, Customize connector
4461xx*	20A, 2.2m cable, Customize connector

*please see the RSD Series Ordering Information

APsmart
600 Ericksen Ave NE, Suite 200 Seattle, WA 98110 | +1-737-218-8486 |
+1-866-374-8538 | support@APsmartGlobal.com | APsmartGlobal.com

Rev1.5 2021-12-02

APsmart

Raising the bar in innovative DC MLPE solar power systems

RSD-D

- Meets NEC 2017 & 2020 (690.12) requirements
- Executes rapid shutdown of system when Transmitter-PLC signal is absent
- Meets SunSpec requirements
- Dual-input channel

RSD-D meets SunSpec requirements, maintaining normal function by continually receiving a heartbeat signal from the APsmart Transmitter. The RSD-D executes rapid system shutdown when the Transmitter signal is absent. Users can manually execute rapid shutdown using Transmitter breaker switch.

RSD-D TECHNICAL DATA

MODEL	RSD-D-15	RSD-D-20
INPUT DATA (DC)		
Range of Input Operating Voltage	8-65V Per Channel	
Max. Input Voltage	80V	
Maximum Cont. Input Current (Imax)	15A Per Channel	20A Per Channel
Maximum Short Circuit Current（Isc）	25A	
OUTPUT DATA (DC)		
Range of Output Operating Voltage	16-130V	
Max. Output Voltage	160V	
Maximum Cont. Output Current	15A	20A
Maximum System Voltage	1000V/1500V	
Maximum Series Fuse Rating	30A	
MECHANICAL DATA		
Operating Ambient Temperature Range	-40 °F to +167 °F (-40 °C to + 75 °C)	
Dimensions (without cable & connectors)	5.5" x 2" x 0.8"(140 mm x 50.6 mm x 20 mm)	
Cable Length	Input 500mm/Output 2200mm	
Cable Cross Section Size	TUV:4mm²/UL:12AWG	
Connector	Stäubli MC4 PV-KBT4&KST4 or Customize	
Enclosure Rating	NEMA Type 6P/IP68	
Over temperature protection	Yes	
FEATURES & COMPLIANCE		
Communication Compliance	PLC	
Safety Compliance	NEC 2017 & 2020 (690.12); UL1741; CSA C22.2 No. 330-17; IEC/EN62109-1	
EMC Compliance	FCC Part15; ICES-003	

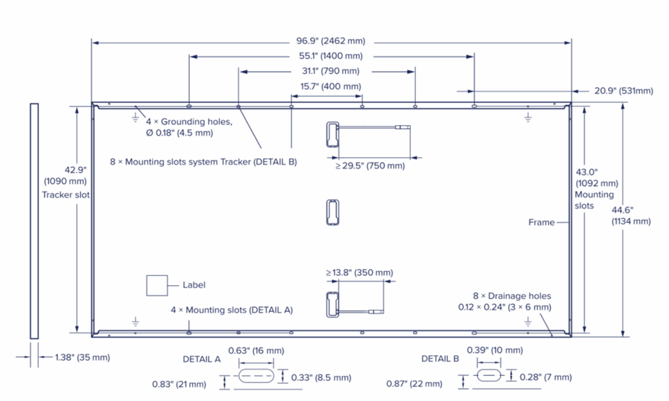
Rev1.5 2021-12-02

RAPID SHUTDOWN

Q.PEAK DUO XL-G11S SERIES

Mechanical Specification

Format	96.9 in × 44.6 in × 1.38 in (including frame) (2462 mm × 1134 mm × 35 mm)
Weight	76.9 lbs (34.9 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodised aluminium
Cell	6 × 26 monocrystalline Q.ANTUM solar half cells
Junction box	2.09-3.98 × 1.26-2.36 × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), Protection class IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥29.5 in (750 mm), (−) ≥13.8 in (350 mm)
Connector	Stäubli MC4; Stäubli MC4-Evo2; - IP68



Electrical Characteristics

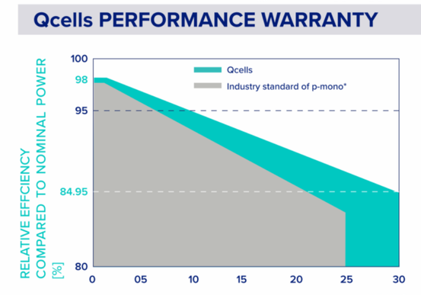
POWER CLASS			590		595		600		605	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / −0 W)										
				BSTC*		BSTC*		BSTC*		BSTC*
Power at MPP[1]	P_{MPP}	[W]	590	645.4	595	650.8	600	656.3	605	661.8
Short Circuit Current[1]	I_{SC}	[A]	13.74	15.04	13.77	15.07	13.80	15.10	13.82	15.13
Open Circuit Voltage[1]	V_{OC}	[V]	53.60	53.79	53.63	53.82	53.66	53.85	53.68	53.87
Current at MPP	I_{MPP}	[A]	13.12	14.36	13.17	14.41	13.22	14.46	13.27	14.52
Voltage at MPP	V_{MPP}	[V]	44.96	44.95	45.18	45.17	45.39	45.38	45.60	45.59
Efficiency[1]	η	[%]	≥21.1		≥21.3		≥21.5		≥21.7	

Bifaciality of P_{MPP} and I_{SC} 70 % ±5 % • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2
[1]Measurement tolerances P_{MPP} ±3 %; I_{SC}, V_{OC} ±5 % at STC: 1000 W/m²; *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70 %, 25±2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]			590	595	600	605
Power at MPP	P_{MPP}	[W]	444.2	448.0	451.8	455.5
Short Circuit Current	I_{SC}	[A]	11.07	11.09	11.11	11.13
Open Circuit Voltage	V_{OC}	[V]	50.69	50.72	50.75	50.77
Current at MPP	I_{MPP}	[A]	10.34	10.38	10.42	10.47
Voltage at MPP	V_{MPP}	[V]	42.97	43.15	43.34	43.52

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

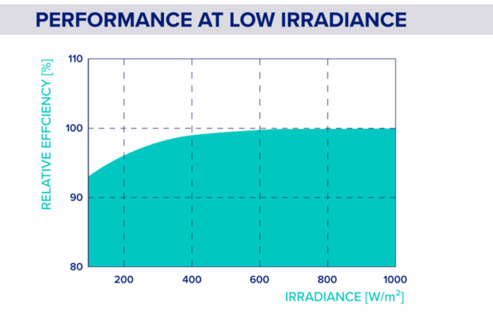
Qcells PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 years.

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

PERFORMANCE AT LOW IRRADIANCE



TEMPERATURE COEFFICIENTS

Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	−0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	−0.34	Nominal Module Operating Temperature	NMOT	[°F]	108±5.4 (42±3 °C)

Properties for System Design

Maximum System Voltage	V_{SYS}	[V]	1500	PV module classification	Class II
Maximum Series Fuse Rating		[A DC]	30	Fire Rating based on ANSI/UL 61730	TYPE 29[4]
Max. Push Load[3], Test/Design		[lbs/ft²]	113 (5400 Pa) / 75 (3600 Pa)	Permitted Module Temperature on Continuous Duty	−40 °F up to +185 °F (−40 °C up to +85 °C)
Max. Pull Load[3], Test/Design		[lbs/ft²]	78 (3750 Pa) / 52 (2500 Pa)		

[3] See Installation Manual for instructions
[4] New Type is similar to Type 3 but with metallic frame

Qualifications and Certificates

Qcells pursues minimizing paper output in consideration of the global environment.

Qcells

Q.PEAK DUO XL-G11S SERIES

Qcells

590-605 Wp | 156 Cells
21.7 % Maximum Module Efficiency

MODEL Q.PEAK DUO XL-G11S.3 / BFG

Bifacial energy yield gain of up to 21%
Bifacial Q.ANTUM solar cells make efficient use of light shining on the module rear-side for radically improved LCOE.

Low electricity generation costs
Q.ANTUM DUO technology with optimized module layout to boost module power and improve LCOE.

A reliable investment
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[1].

Enduring high performance
Long-term yield security with Anti LID and Anti PID Technology[2], Hot-Spot Protect.

Frame for versatile mounting options
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400 Pa) and wind loads (3750 Pa)[3].

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

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

The ideal solution for:
Ground-mounted solar power plants

SOLAR PANELS

401 S Inglewood Ave, Inglewood, CA 90301

BENNETT-KEW K-8 CAMPUS MODERNIZATION

11710 S Cherry Ave, Inglewood, CA 90303

Date		Issued For
1	11/5/2024	DSA SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER MANAN H. CHRISTIAN E 22864 9/30/25 ELECTRICAL STATE OF CALIFORNIA

DSA A# 03-124773 FILE # 19-48

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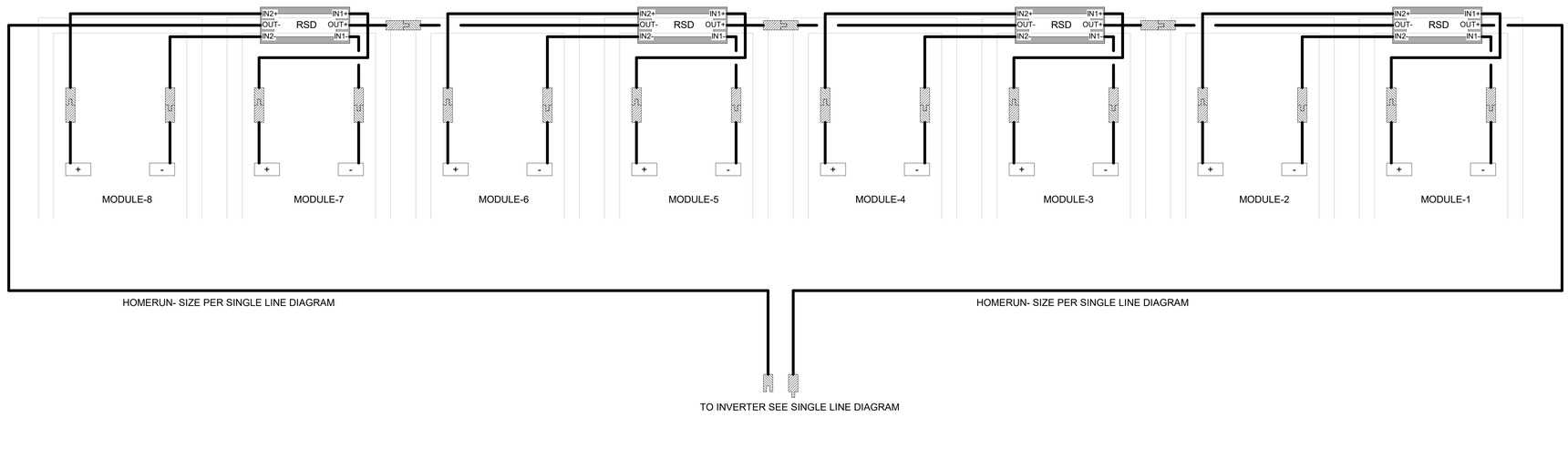
Job No. 23-301

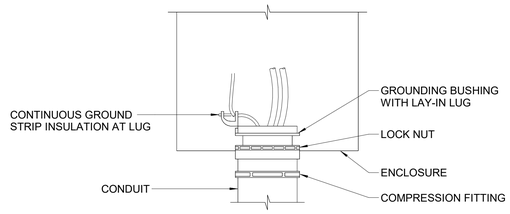
2018-04434-000

PV EQUIPMENT SPECS

PV-401

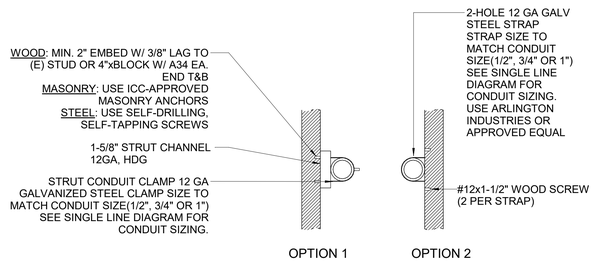


TYPICAL PV STRING CONNECTION TO AP SMART RSD SCALE NTS 4



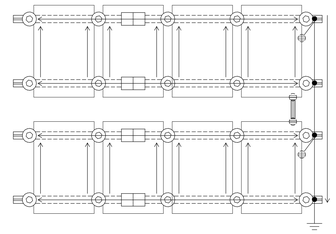
CONDUIT GROUNDING DETAIL SCALE NTS 3

NOTE:
1. ALL HOLES FOR CONDUIT SHALL BE PROVIDED WITH CONDUIT FITTINGS HAVING AN ENVIRONMENTAL RATING APPROVED TO MAINTAIN NEMA 3R ENCLOSURE RATING (UL508A, TABLE 19.2). IN GENERAL COMPONENTS MARKED "WEATHERPROOF" OR "RAINPROOF" SHALL BE INSTALLED ONLY BELOW THE LOWEST UNINSULATED LIVE PARTS WITHIN THE ENCLOSURE. CONDUIT OPENINGS ABOVE THE LOWEST UNINSULATED LIVE PARTS SHALL BE PROVIDED WITH CONDUIT FITTINGS MARKED "WET LOCATION" OR "RAINTIGHT".
2. CONDUITS SHALL BE SECURELY FASTENED IN PLACE AT INTERVALS NOT TO EXCEED 10FT. IN ADDITION, EACH CONDUIT RUN BETWEEN TERMINATIONS POINTS SHALL BE SECURELY FASTENET WITHIN 3FT OF EACH OUTLET BOX, JUNCTION BOX, DEVICE BOX, CABINET, CONDUIT BODY OR OTHER TUBING TERMINATION



CONDUIT SUPPORT-WALL SCALE NTS 2

TYPIAL PV ARRAY/STRING - EXACT PANEL QTY PER ARRAY PER PLANS



LEGEND

- MOUNTING LUG UFO OR CAMO
- MOUNTING RAILS
- BONDED SPLICE(RAIL CONNECTION)
- MODULE GROUNDING LUG, ATTACH THE LUGS IN THE GROUNDING HOLES PROVIDED BY SOLAR PANEL MANUFACTURER
- RAIL GROUNDING LUG
- EQUIPMENT GROUNDING CONDUCTOR BACK TO INVERTER SIZE PER PLANS PROVIDE ADDITIONAL 3/4"C WHEREVER NEEDED. USE INSULATED COPPER CONDUCTOR
- 8" BONDING JUMPER(ALTERNATIVE ROW TO ROW BOND)
- FAULT CURRENT GROUND PATH

NOTES:
1. BASIS OF DESIGN FOR THIS DETAIL IS IRONRIDGE MOUNTING STRUCTURE AND GROUNDING LUG. FOR A DIFFERENT MOUNTING STRUCUTRE USE THE GROUNDING LUGS PROVIDE BY MOUNTING MANUFACTURER. INSTALL GROUNDING PER MANUFACTURER REQUIREMENTS AND PROVIDE ALL REQUIRED ACCESSORIES
2. PROVIDE MINIMUM ONE GROUNDING LUG PER SOLAR PANEL AND ONE GROUNDING FOR EACH RAIL. GROUNDING LUG SHALL BE PER MOUNTING STRUCTURE MANUFACTURER

TYPICAL PV ARRAY/STRING GROUNDING SCALE NTS 1

INGLEWOOD UNIFIED SCHOOL DISTRICT

401 S Inglewood Ave, Inglewood, CA 90301

BENNETT-KEW K-8 CAMPUS MODERNIZATION

11710 S Cherry Ave, Inglewood, CA 90303

Date	Issued For
1 11/5/2024	DSA SUBMITTAL

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DSA A# 03-124773 FILE # 19-48

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W W W . B U D L O N G . C O M
Job No. 23-301

2018-04434-000

PV DETAILS

PV-501

AUDIO VISUAL LEGEND

- PA — PAGING SPEAKER (WALL)
- CL — MASTER CLOCK (WALL)

STRUCTURED CABLING LEGEND

- # / #1 / # — TELECOM OUTLET (FLOOR, CEILING, WALL) '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES
- # / #1 / # — TELECOM DIRECT ATTACH (FLOOR, CEILING, WALL) '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES
- BMS# / BMS#1 / BMS# — BMS OUTLET (FLOOR, CEILING, WALL) '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES
- PMS# / PMS#1 / PMS# — PMS OUTLET (FLOOR, CEILING, WALL) '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES
- AP# / AP#1 / AP# — WIRELESS ACCESS POINT OUTLET (CEILING, WALL) '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES
- AP# / AP#1 / AP# — WIRELESS ACCESS POINT DIRECT ATTACH (CEILING, WALL) '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES
- TVC / TVC1 / TVC — TELEVISION OUTLET (CEILING, WALL) (1) QUAD-SHIELD COAXIAL CABLE
- TV# / TV#1 / TV# — TELEVISION OUTLET (CEILING, WALL) '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES
- TVC# / TVC#1 / TVC# — TELEVISION OUTLET (CEILING, WALL) (1) QUAD-SHIELD COAXIAL CABLE AND '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES
- SP# / SP#1 — TELECOM OUTLET MOUNTED IN SERVICE PANEL (CEILING) '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES
- W — WALL PHONE OUTLET (WALL) (1) CATEGORY 6A UTP CABLE
- EMR — ELEVATOR MACHINE ROOM OUTLET (WALL) (2) CATEGORY 6A UTP CABLES
- F# — SYSTEMS FURNITURE OUTLET (MOUNTED TO FURNITURE) '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES
- EV# — ELECTRIC VEHICLE CHARGING OUTLET (WALL) '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES
- WM# — TELECOM OUTLET MOUNTED HORIZONTALLY ON ELECTRICAL CONTRACTOR PROVIDED DUAL CHANNEL WIREMOLD '#' INDICATES QUANTITY OF CATEGORY 6A UTP CABLES

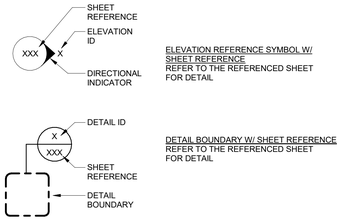
GENERAL LEGEND

- J / J1 — JUNCTION BOX (FLOOR, CEILING, WALL)
- F / F1 — FURNITURE FEED (FLOOR, WALL)
- P — POWER POLE FOR POWER/TELECOM
- MULTI-OUTLET RACEWAY SYSTEM (DEVICES AS INDICATED)
- TMGB/TGB — TELECOM MAIN GROUND BUSBAR/TELECOM GROUND BUSBAR

PATHWAY LEGEND

- CONDUIT DOWN
- CONDUIT UP
- BREAK SYMBOL
- CONDUIT STUB TERMINATE WITH BUSHING
- CONDUIT SLEEVE
- J — NON-CONTIGUOUS J-HOOK CABLE SUPPORT ROUTE
- PATHWAY INTENT (CEILING)
- PATHWAY INTENT (IN OR UNDER SLAB)
- PB — PULLBOX (REFER TO PULLBOX SIZING CHART)
- HH — UNDERGROUND HAND HOLE
- MH — UNDERGROUND MAINTENANCE HOLE
- CT — TELECOM OVER HEAD CABLE TRAY
- CT — TELECOM UNDER FLOOR CABLE TRAY

REFERENCE SYMBOLS



ELEVATION REFERENCE SYMBOL W/ SHEET REFERENCE
REFER TO THE REFERENCED SHEET FOR DETAIL

DETAIL BOUNDARY W/ SHEET REFERENCE
REFER TO THE REFERENCED SHEET FOR DETAIL

SHEET AND KEY NOTE REFERENCE SYMBOLS

1 — KEY NOTE CALLOUT
REFER TO THE "KEY NOTES" TABLE ON THE SAME SHEET FOR MORE INFORMATION

1 — EQUIPMENT CALLOUT
REFER TO THE "EQUIPMENT SCHEDULE" FOR DEVICE INFORMATION

TELECOMMUNICATIONS NOTES

1. WORK SHALL COMPLY WITH APPLICABLE TIA STANDARDS.
2. COPPER TERMINATION HARDWARE TO BE 110 STYLE IDC OR EQUIVALENT.
3. TERMINATE CONDUCTORS; NO CABLE SHALL CONTAIN NON-TERMINATED ELEMENTS EXCEPT THE 25TH PAIR OF BINDER GROUPS IN MULTIPAIR COPPER BACKBONE CABLES.
4. TELECOMMUNICATIONS FACEPLATES SHALL MATCH ELECTRICAL SWITCH AND ELECTRICAL RECEPTACLE PLATE FINISHES.
5. PROVIDE LABELING FOR OUTLETS AND PATCH PANELS. COORDINATE EXACT CABLE COLOR, CODE AND LABELING REQUIREMENTS FOR TELECOMMUNICATIONS CABLING WITH THE OWNER.
6. MAINTAIN A MINIMUM OF 36-INCH CLEARANCE IN FRONT AND BEHIND OF COMMUNICATIONS CABINETS/RACKS.
7. MONITOR CABLE PULL TENSION TO ENSURE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY STANDARDS ARE NOT EXCEEDED.
8. CABLE TRAY TO BE TRAPEZE OR CANTILEVER MOUNTED ONLY. BOND SECTIONS OF TRAY TOGETHER WITH MANUFACTURER APPROVED BONDING METHOD PER NEC.CABLE TRAY SHALL BE PROVIDED WITH 25 PERCENT SPARE CAPACITY.
9. CONTRACTOR TO REMOVE PAINT AND OTHER FINISHES AS REQUIRED TO PROVIDE BARE METAL-TO-METAL CONTACT BETWEEN CABLE TRAY/LADDER RACK AND BONDING CONDUCTOR TERMINATION LUG.
10. SEISMIC BRACING FOR CABLE TRAYS SHALL BE PROVIDED AS REQUIRED BY CODE, LOCAL GOVERNING JURISDICTION AND CABLE TRAY MANUFACTURER'S SPECIFICATIONS.
11. CABLES SHALL BE INSTALLED IN "J" HOOKS, CONDUITS, CABLE TRAY, OR AN APPROVED RACEWAY SYSTEM. WHERE CABLE TRAY IS NOT AVAILABLE, HORIZONTAL CABLE WILL BE SUPPORTED EVERY FIVE FEET WITH "J" HOOKS SUFFICIENT IN SIZE TO HANDLE BUNDLED CABLES. COPPER AND OPTICAL FIBER CABLES WILL BE DIVIDED INTO SEPARATE BUNDLES AND INSTALLED IN SEPARATE "J" HOOKS. IF CABLE SLACK EXCEEDS TWELVE (12) INCHES, ADDITIONAL SUPPORTS WILL BE INSTALLED TO RELIEVE CABLE STRESS.
12. COMMUNICATIONS CABLING SHALL BE RATED FOR THE ENVIRONMENT THAT IT IS INSTALLED. FOR EXAMPLE CMP FOR PLENUM RATED, CMR FOR RISER RATED, OR OUTDOOR RATED FOR OUTDOOR ENVIRONMENTS.
13. REUSABLE VELCRO TIES SHALL BE USED TO BUNDLE OR MANAGE CABLES. PLASTIC ZIP TIES ARE NOT APPROVED FOR USE.
14. LOW VOLTAGE CABLING SHALL NOT BE PAINTED. PAINTED CABLING SHALL BE REMOVED AND REPLACED WITH NEW CABLING.
15. CAREFULLY LAY CABLE WITH APPROPRIATE RADIUS OF CURVATURE AND PROTECT AT BENDS AND CORNERS. OBSERVE MINIMUM BEND RADIUS AND TENSION LIMITATIONS AS SPECIFIED BY TIA.
16. THE CONTRACTOR SHALL ENSURE THAT INSTALLED CABLES ARE FREE FROM TWISTS, KINKS, SHARP BENDS, CUTS, GOUGES OR ANY OTHER PHYSICAL DAMAGE.
17. CONTRACTOR TO PROVIDE PREFABRICATED FIRE-RATED RE-ENTERABLE SLEEVES AT THE LOCATIONS AND SIZES SPECIFIED IN THE DRAWINGS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
18. OUTSIDE PLANT COPPER CABLES SHALL BE TERMINATED ON PROTECTED ENTRANCE TERMINALS.
19. MAINTENANCE HOLES AND HANDHOLES SHALL BE SIZED PER THE CURRENT EDITION OF ANSI/TIA STANDARD 758: CUSTOMER-OWNED OUTSIDE PLANT TELECOMMUNICATIONS INFRASTRUCTURE STANDARD.
20. MAINTENANCE HOLES AND HANDHOLES SHALL BE LOCATED IN NON-TRAFFIC AREAS TO THE MAXIMUM DEGREE POSSIBLE.
21. CATEGORY CABLES SHALL BE CONTINUOUS FROM CLOSET TO WORK AREA OUTLET AND FREE FROM SPLICES, REVERSES, GROUNDS, OR OTHER CONNECTIONS. PROVIDE A 5-FOOT SERVICE LOOP ABOVE THE CLOSEST ACCESSIBLE CEILING FOR EACH HORIZONTAL CABLE.
22. COMMUNICATION RACEWAYS AND PATHWAYS SHALL BE INSTALLED TO MINIMIZE UNNECESSARY CABLING LENGTH AND MAINTAIN INDUSTRY STANDARD LENGTH LIMITATIONS FOR HORIZONTAL CABLE DISTRIBUTION (E.G. CAT.6). BASIC LINK CABLE LENGTH SHALL NOT EXCEED 295FT. (90M) FOR UTP CABLE, 200 FT. (60M) FOR SERIES-6 COAXIAL CABLE.
23. EQUIPMENT CABINETS AND PATCH PANELS SHALL BE ARRANGED TO ALLOW FOR NATURAL WIRING PROGRESSION IN FUNCTIONAL FIELDS. MINIMIZE CROSSING OF WIRES AND ALLOW FOR EASY ACCESS TO ALL COMPONENTS.
24. LABEL STRUCTURED CABLING AND DEVICES IN ACCORDANCE WITH ANSI/TIA-606.
25. CONTRACTOR SHALL BE RESPONSIBLE WITH VERIFYING OUTLET COUNTS AND PATHWAY SIZING PRIOR TO INSTALLATION.
26. EQUIPMENT RACK AND CABINET ELEVATIONS SHOW THE POSITION OF TYPICAL COMPONENTS. CONTRACTOR TO COORDINATE ACTUAL COMPONENT PLACEMENT WITH OWNERSHIP.
27. PROVIDE CATEGORY CABLING FOR ALL IP RELATED SECURITY AND AUDIO VISUAL DEVICES SHOWN ON THE SECURITY AND AUDIO VISUAL DRAWINGS.
28. PROVIDE WEATHERPROOF, IN-USE COVER FOR EXTERIOR DATA OUTLETS.
29. SERVICE ENTRY CONDUITS SHALL SLOPE AWAY FROM THE BUILDING WITH A MINIMUM PITCH OF .125" PER FOOT TO PREVENT WATER INFILTRATION.
30. ALL CONDUITS ENTERING THE BUILDING SHALL BE SEALED PROPERLY TO PREVENT RODENTS, WATER OR GASES FROM ENTERING THE BUILDING.

LEGEND NOTE

1. THIS SHEET IS A GENERAL LIST OF SYMBOLS AND SHALL BE USED TO DEFINE ITEMS INDICATED ON DRAWINGS. NOT ALL SYMBOLS ARE NECESSARILY USED ON THIS PROJECT.

GENERAL NOTES

1. SIZE AND ORIENTATION OF PULL BOXES SHALL MEET OR EXCEED THE ANSI/TIA STANDARD 569 DESIGN CRITERIA.
2. PULL BOXES SHALL BE PROVIDED WHERE THE COMBINED SUM OF THE BENDS EXCEEDS 180 DEGREES AND/OR EVERY 100 LINEAR FEET.
3. DO NOT CHANGE DIRECTION OF CABLE TRAVEL IN PULL BOX (CABLES MUST ENTER AND EXIT PULL BOX IN STRAIGHT LINE).
4. INCLUDE REQUIRED JUNCTION AND PULL BOXES REGARDLESS OF INDICATION ON THE DRAWINGS (WHICH DUE TO THE SYMBOLIC METHODS OF NOTATION, MAY BE OMITTED).
5. LOW-VOLTAGE CONDUITS LARGER THAN 2" SHALL HAVE A MINIMUM BEND RADIUS OF 10:1 OF THE INSIDE DIAMETER FOR ELBOWS. LOW-VOLTAGE CONDUITS 2" SMALLER SHALL HAVE A MINIMUM BEND RADIUS OF 6:1 OF THE INSIDE DIAMETER FOR ELBOWS.
6. FIRESTOPPING: CONDUIT/SLEEVE PENETRATIONS THROUGH RATED WALLS AND FLOORS SHALL BE SEALED WITH MATERIAL CAPABLE OF PREVENTING THE PASSAGE OF FLAMES, HOT GASSES AND SMOKE WHEN SUBJECTED TO THE REQUIREMENTS OF THE TEST STANDARD SPECIFIC FOR APPLICABLE CODES.
7. CONDUIT FRAMING SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
8. PROVIDE PULL TAPE IN EMPTY CONDUIT AND INNERDUCT. PULL TAPE SHALL BE RATED FOR 200 LBS IN ALL CONDUIT.
9. NOTIFY THE DESIGNER OF ANY CONFLICTS BETWEEN CONTRACT DOCUMENTS AND OBSERVED FIELD CONDITIONS.
10. THE LOCATION OF EQUIPMENT SHOWN ON THE PLANS IS APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE LOCATION OF EQUIPMENT PRIOR TO THE START OF WORK.
11. BOND METALLIC EQUIPMENT, RACKS, CABINETS, CABLE TRAY, SLEEVES, ETC. TO THE TELECOMMUNICATIONS MAIN GROUND BUS WITH 2-HOLE NON-TWISING LUGS. CONDUITS SHALL BE REAMED WITH BUSHINGS INSTALLED.
12. THE COLOR AND FINISH OF EXPOSED DEVICES IN PUBLIC AREAS SHALL BE REVIEWED AND APPROVED BY THE ARCHITECT.
13. INSTALLATIONS OF EXPOSED EQUIPMENT SHALL BE COORDINATED WITH ASSOCIATED ARCHITECTURAL DETAILS TO MEET THE INTENDED AESTHETIC APPEARANCE. WIRING, CONDUITS, BACK BOXES AND OTHER ASSOCIATED CONNECTIONS SHALL BE CONCEALED BEHIND EQUIPMENT OR WITHIN EXPOSED MOUNTED BRACKETS. EXPOSED WIRING IS PROHIBITED.
14. SECURELY BOLT EQUIPMENT RACKS TO THE FLOOR AND OVERHEAD CABLE TRAY AS SHOWN ON THE DRAWINGS.
15. CABLING VIA J-HOOKS IS ACCEPTABLE WITHIN EASILY ACCESSIBLE DROPPED/ COVERED CEILINGS ONLY. OTHERWISE, CABLING MUST REMAIN CONCEALED AND CONTINUOUS IN CONDUIT. CANNOT BE EXPOSED IN OPEN DECK CEILINGS.

AUDIO VISUAL NOTES

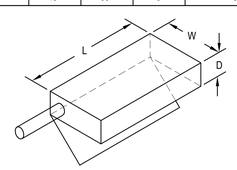
1. SUPPLY ALL JACKS, RACKS, WIRE, CABINETRY, CONNECTORS, MATERIALS, PARTS, EQUIPMENT AND LABOR NECESSARY FOR THE COMPLETE INSTALLATION OF THE SYSTEMS, IN FULL ACCORDANCE WITH THE RECOMMENDATIONS OF THE EQUIPMENT MANUFACTURERS AND WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
2. REFER TO FLOW DIAGRAMS, RISERS, AND SPECIFICATIONS FOR COMPLETE OPERATIONAL REQUIREMENTS. CONTRACTOR IS TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
3. WHERE SIGNAL TYPES ARE PROVIDED AND NO CABLE TYPE INDICATED THE CONTRACTOR SHALL PROVIDE THE APPROPRIATE INTERCONNECT CABLE BASED ON THE SIGNAL TYPE REQUIREMENTS.
4. FURNITURE LAYOUT INDICATED ON DRAWINGS IS NOT FINAL AND MAY DIFFER. COORDINATE FINAL FURNITURE CONFIGURATION WITH OWNER PRIOR TO FABRICATION/CONSTRUCTION.
5. TERMINAL BLOCK, BOARDS, STRIPS, OR CONNECTORS SHALL BE FURNISHED FOR ALL CABLES, WHICH INTERFACE WITH RACKS, CABINETS, CONSOLES, OR EQUIPMENT MODULES.
6. ROUTE ALL CABLE AND WIRING WITHIN EQUIPMENT RACKS AND CABINETRY ACCORDING TO FUNCTION, SEPARATING WIRES OF DIFFERENT SIGNAL LEVELS (MICROPHONE, LINE LEVEL, AMPLIFIER OUTPUT, AC, ETC.) BY AS MUCH DISTANCE AS POSSIBLE. NEATLY ARRANGE AND BUNDLE ALL CABLE LOOSELY WITH VELCRO TIES.
7. POWER CABLES, CONTROL CABLES, AND HIGH LEVEL CABLES SHALL BE INSTALLED PER BICSI/AVIXA STANDARDS.
8. CABLING WITHIN RACKS SHALL BE CONTAINED IN "FINGER TRAY" OR VELCRO-TIED TO THE SIDE OF THE RACK IN A NEAT AND ORDERLY FASHION.
9. ALL CABLES ROUTED OUTSIDE OF RACKS AND CONDUIT SHALL BE CONTAINED IN A SUITABLE HARNESS OR WIREWAY TO MAINTAIN A NEAT AND CLEAN INSTALLATION.
10. OBSERVE PROPER CIRCUIT POLARITY AND LOUDSPEAKER WIRING POLARITY. NO CABLES SHALL BE WIRED WITH A POLARITY REVERSAL BETWEEN CONNECTIONS, AT EITHER END.
11. ALL CABLES SHALL BE CONTINUOUS LENGTHS WITHOUT SPLICES. ALL SYSTEM WIRE (EXCEPT SPARE WIRE, AFTER BEING CUT AND STRIPPED) SHALL HAVE THE WIRE STRAND TWISTED BACK TO THEIR ORIGINAL LAY AND BE TERMINATED BY APPROVED SOLDERED OR MECHANICAL MEANS.
12. CLEARLY AND PERMANENTLY LABEL ALL JACKS, CONTROLS, CONNECTIONS, AND SO FORTH. ALL LABELING SHALL BE COMPLETED PRIOR TO FINAL SYSTEM EQUALIZATION. HAND LABELING IS PROHIBITED.
13. ALL EQUIPMENT SHALL BE HELD FIRMLY IN PLACE WITH APPROPRIATE MOUNTING HARDWARE. ALL EQUIPMENT SHALL BE INSTALLED TO PROVIDE REASONABLE SAFETY TO THE OPERATOR. SUPPLY ADEQUATE VENTILATION FOR ALL ENCLOSED EQUIPMENT ITEMS WHICH PRODUCE HEAT.

ABBREVIATIONS

AC	ABOVE COUNTER
ACP	ACCESS CONTROL PANEL
ACS	ACCESS CONTROL SYSTEM
ADA	AMERICANS WITH DISABILITIES ACT
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ALT	ALTERNATE
AP	ACCESS POINT (WIRELESS)
ARF	ABOVE RAISED FLOOR
ARRM	AIR-FILLED UTP RISER CABLE
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIOVISUAL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BB	BACKBOX
BEF	BUILDING ENTRANCE FACILITY
BFC	BELOW FINISHED CEILING
BFG	BELOW FINISHED GRADE
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
BOC	BOTTON OF CONDUIT
BOM	BILL OF MATERIALS
C	CONDUIT
CAT.X	CATEGORY X
CATV	COMMUNITY ANTENNA TV
CB	CIRCUIT BREAKER
CCR	CAMPUS COMMUNICATIONS ROOM
CCTV	CLOSED CIRCUIT TELEVISION (ANALOG)
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CKT	CIRCUIT
CL	CENTERLINE
CLG	CEILING
CLR	CLEANROOM
CM	COMMUNICATIONS CABLE
CMP	COMMUNICATIONS PLENUM CABLE
CMR	COMMUNICATIONS RISER CABLE
CMU	CONCRETE MASONRY UNIT
COAX	COAXIAL CABLE
COL	COLUMN
CONT	CONTINUOUS
CP	CONSOLIDATION POINT
CR	COMPUTER ROOM
DAS	DISTRIBUTED ANTENNA SYSTEM
DBS	DIGITAL BROADCAST SYSTEM
DCMS	DATA CENTER MANAGEMENT SYSTEM
DDC	DIRECT DIGITAL CONTROL
DEMO	DEMOLITION
DIA	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DN	DOWN
DP	DISTRIBUTION PANELBOARD
DTL	DETAIL
DWG	DRAWING
EA	EACH
EC	ELECTRICAL CONTRACTOR
EF	ENTRANCE FACILITY
ELEC	ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EMI	ELECTROMAGNETIC INTERFERENCE
EMR	ELEVATOR MACHINE ROOM
EMT	ELECTRICAL METALLIC TUBING
ENC	ELECTRICAL NONMETALLIC CONDUIT
ENET	ETHERNET NETWORK
ENT	ELECTRICAL NONMETALLIC TUBING
ER	EQUIPMENT ROOM
ERRCS	EMERGENCY RESPONDER RADIO COMMUNICATIONS SYSTEM
ESS	ELECTRONIC SAFETY & SECURITY
ETM	EXISTING TO MOVE
ETBR	EXISTING TO BE REMOVED
EX. (E)	EXISTING
EXT	EXTERIOR
(F)	FUTURE
FA	FIRE ALARM
FBO	FURNISHED BY OTHERS
FCS	FACILITY CONTROL SYSTEM
FDDI	FIBER DISTRIBUTED DATA INTERFACE
FDU	FIBER OPTIC DISTRIBUTION UNIT
FF	FINISHED FLOOR
FG	FINISHED GRADE
FMS	FACILITY MANAGEMENT SYSTEMS
FMT	FLEXIBLE METALLIC TUBING
F/UTP	FOILED UNSHIELDED TWISTED PAIR
FO	FIBER OPTIC
FOC	FACILITY OPERATION CENTER
FT	FOOT, FEET
G	GROUND
GA	GAUGE
GC	GENERAL CONTRACTOR
GCS	GLOBAL COMMUNICATIONS SYSTEM
GMP	GUARANTEED MAXIMUM PRICE
GND	GROUND
GNS	GLOBAL NETWORK SERVICES
GWB	GYPSUM WALLBOARD
HAC	HOT AISLE CONTAINMENT
HC	HORIZONTAL CROSS CONNECT
HH	HANDHOLE (OSP CABLE ACCESS)
HORZ	HORIZONTAL
HP	HORSE POWER
HT, (H)	HEIGHT
HVAC	HEATING, VENTILATING & AIR CONDITIONING
IAW	IN ACCORDANCE WITH
IBC	INTERNATIONAL BUILDING CODE
IC	INTERMEDIATE CROSS-CONNECT
ID	INSIDE DIAMETER
IDF	INTERMEDIATE DISTRIBUTION FRAME
IDP	INTRUSION DETECTION PANEL
IDS	INTRUSION DETECTION SYSTEM
IMC	INTERMEDIATE METAL CONDUIT
IN	INCH/INCHES
IP	INTERNET PROTOCOL
IT	INFORMATION TECHNOLOGY
JB	JUNCTION BOX
LAN	LOCAL AREA NETWORK
LED	LIGHT EMITTING DIODE
LMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LNC	LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT
LSS	LIFE SAFETY SYSTEMS
LV	LOW VOLTAGE
MAU	MUTLIPLE ACCESS UNIT
MAX	MAXIMUM
MC	MAIN CROSS CONNECT
MCR	MAIN COMPUTER ROOM
MDF	MAIN DISTRIBUTION FRAME
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL, PLUMBING
MER	MAIN EQUIPMENT ROOM
MFR	MANUFACTURER
MH	MAINTENANCE HOLE (OSP CABLE ACCESS)
MIN	MINIMUM
MISC	MISCELLANEOUS
MM	MULTIMODE
MMR	MEET ME ROOM
MNS	MASS NOTIFICATION SYSTEM
MON	MONITOR
MOR	MIDDLE OF ROW
MPOE	MAIN POINT OF ENTRY
MTD	MOUNT, MOUNTED
MuTOA	MULTI-USER TELECOMMUNICATIONS OUTLET ASSEMBLY
(N)	NEW
N/A	NOT APPLICABLE
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFC	OPTICAL FIBER CABLE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFE	OWNER FURNISHED EQUIPMENT
OFOI	OWNER FURNISHED, OWNER INSTALLED
OIT	OPERATOR INTERFACE TERMINAL
OMX	LASER OPTIMIZED MULTIMODE FIBER, "X" INDICATES CLASS
OSX	OPTICAL SINGLEMODE FIBER, "X" INDICATES CLASS
OSP	OUTSIDE PLANT
P/N	PART NUMBER
PA	PUBLIC ADDRESS
PB	PULL BOX
PDU	POWER DISTRIBUTION UNIT
PM	PROJECT MANAGER
PMS	POWER MANAGEMENT SYSTEM
PNL	PANEL
PoE	POWER OVER ETHERNET
POP	POINT OF PRESENCE (TELECOMMUNICATIONS)
POTS	PLAIN OLD TELEPHONE LINE
PP	PATCH PANEL
PR	PAIR
PS	PLUG STRIP
PTZ	PAN-TILT-ZOOM
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTY	QUANTITY
RCP	REFLECTED CEILING PLAN
RCPT	RECEPTACLE
REQD	REQUIRED
RF	RADIO FREQUENCY
RFI	REQUEST FOR INFORMATION
RM	ROOM
RMC	RIGID METAL CONDUIT
RU	RACK UNIT (1RU=1.75")
RX	RECEIVER
SDF	SECURITY DISTRIBUTION FRAME
SECT	SECTION
SIM	SIMILAR
SM	SINGLE-MODE
SP	SERVICE PROVIDER
SPEC	SPECIFICATIONS
SPOE	SECONDARY POINT OF ENTRY
SS	STAINLESS STEEL
STD	STANDARD
STP	SHIELDED TWISTED PAIR
TB	TERMINAL BLOCK
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TBD	TO BE DETERMINED
TC	TIMECLOCK
TDR	TIME DOMAIN REFLECTOMETER
TEMP	TEMPORARY
TP	TRANSITION POINT
TSER	TELECOMMUNICATIONS SERVICE ENTRANCE ROOM
TR	TELECOMMUNICATIONS ROOM
TV	TELEVISION
TX	TRANSMITTER
TYP	TYPICAL
UG	UNDERGROUND
UC	UNDER COUNTER
UL	UNDERWRITERS LABORATORIES INC
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR
VCT	VINYL COMPOSITION TILE
VIB	VERTICAL INSIDE BEND
VIF	VERIFY IN FIELD
VOB	VERTICAL OUTSIDE BEND
VP	VAPORPROOF
VSS	VIDEO SURVEILLANCE SYSTEM
W	WIDTH
WAO	WORK AREA OUTLET
WAN	WIDE AREA NETWORK
WAP	WIRELESS ACCESS POINT
WP	WATERPROOF
WT	WEIGHT
XP	EXPLOSION PROOF
3R	NEMA 3R ENCLOSURE
4X	NEMA 4X ENCLOSURE
8P8C	8 PIN / 8 CONDUCTOR

PULL BOX SIZING CHART

CONDUIT TRADE SIZE	WIDTH	LENGTH	DEPTH	WIDTH INCREASE FOR EACH ADDITIONAL CONDUIT
3/4"	4"	12"	3"	2"
1"	4"	16"	3"	2"
1-1/4"	6"	20"	3"	3"
1-1/2"	8"	27"	4"	4"
2"	8"	36"	4"	5"
2-1/2"	10"	42"	5"	6"
3"	12"	48"	5"	6"
3-1/2"	12"	54"	6"	6"
4"	15"	60"	8"	8"

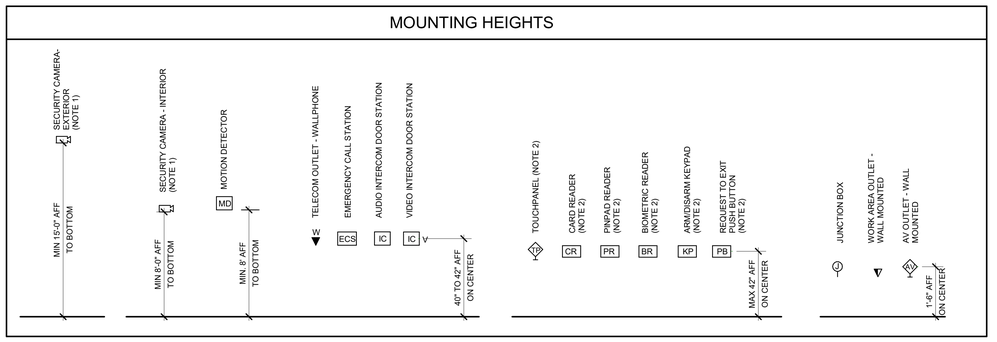


CONDUIT FILL CHART

CONDUIT TRADE SIZE	CABLE OUTSIDE DIAMETER				
	0.18"	0.22"	0.24"	0.29"	0.32"
3/4"	7	5	4	3	2
1"	12	8	7	5	4
1-1/4"	19	13	11	7	6
1-1/2"	28	19	16	11	9
2"	49	33	28	19	16
2-1/2"	77	52	43	30	24
3"	111	74	63	43	35
4"	198	132	111	76	63

*BASED ON INDUSTRY STANDARD OF 40% FILL

MOUNTING HEIGHTS



MOUNTING HEIGHT NOTES

1. DEVICE MOUNTING HEIGHTS VARY DEPENDING ON TYPE. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR RECOMMENDED MOUNTING HEIGHTS.
2. COORDINATE MOUNTING HEIGHTS WITH ARCHITECTURAL DRAWINGS PRIOR TO INSTALLATION.

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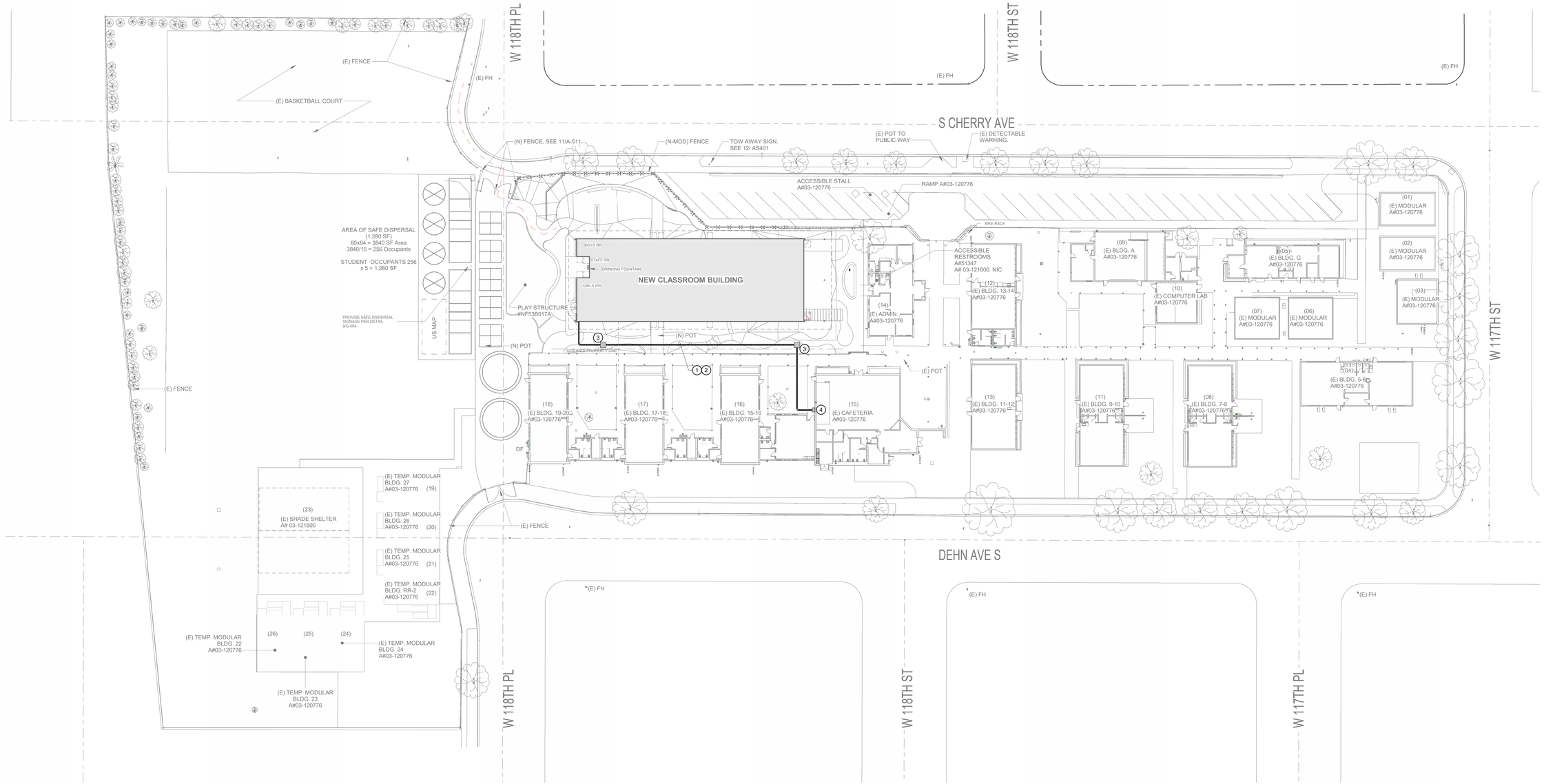
2023-IU002-002

Technology General Notes & Abbreviations

T-001

KEYED NOTES:

1. (2) 4" CONDUITS WITH (1) 4" 4-CELL FABRIC INNERDUCT IN EACH CONDUIT.
2. 12SM/12MM FIBER AND 12 PAIR CAT-5E COPPER TO (E) CAMPUS MDF IN MULTI-PURPOSE CAFETERIA.
3. 3'x3'x3' PRECAST TELECOM PULLBOX WITH SUMP.
4. PROVIDE PULLBOX ON SIDE OF BUILDING. CONTINUE CONDUITS INTO CAMPS MDF WITHIN THE MULTI-PURPOSE CAFETERIA. COORDINATE PATH, LOGISTICS AND CABLING TERMINATIONS WITH THE DISTRICT.



N

SITE PLAN

1" = 30'-0"

Inglewood Unified School District

401 S. Inglewood Ave.
Inglewood, CA 90301

IUSD Bennett-Kew P-8 Academy

11710 S Cherry Ave
Inglewood, CA 90303

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LICENSED ARCHITECT WILLIAM J. MCENTIRE C-36143 4/30/2025 RENEWAL DATE STATE OF CALIFORNIA

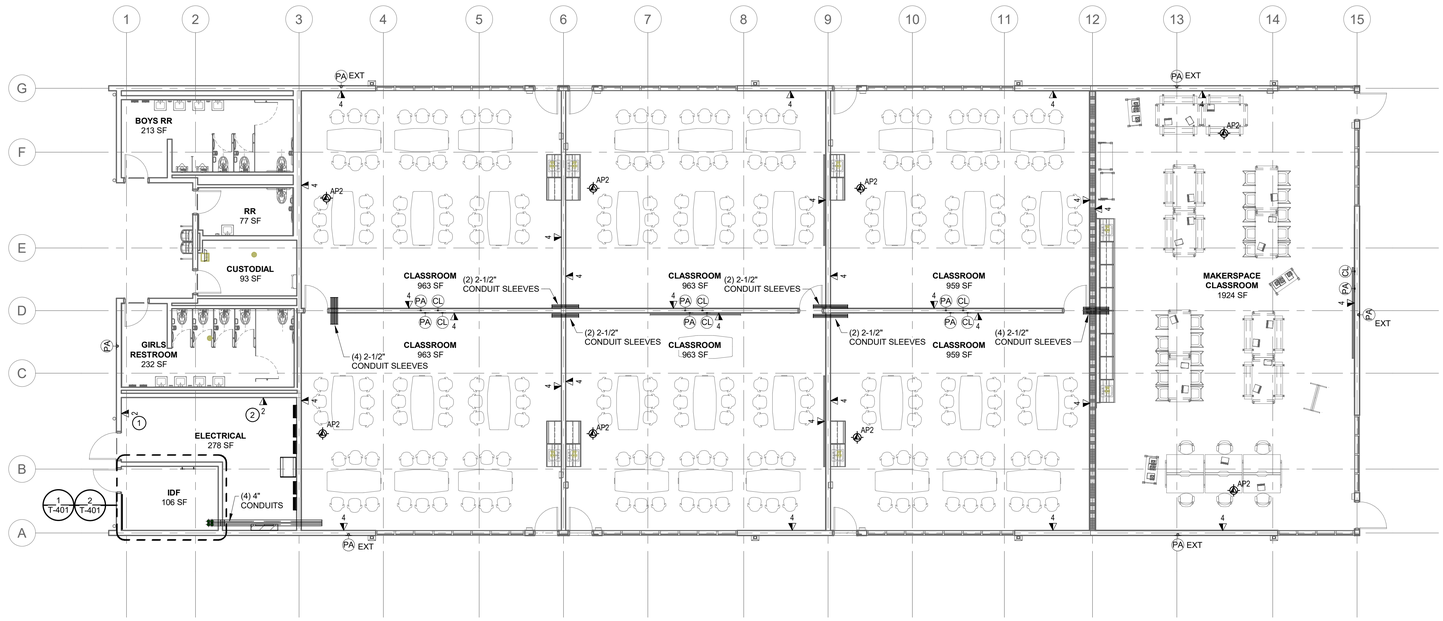
2023-IU002-002

Technology Site Plan

TS101

KEYED NOTES:

1. FOR PHOTOVOLTAIC SMART METER. CABLE TO BE CONTINUOUS VIA CONDUIT INTO EQUIPMENT CONNECTION. FIELD COORDINATE AND CONFIRM WITH EQUIPMENT VENDOR.
2. FOR LIGHTING CONTROL PANEL. CABLE TO BE CONTINUOUS VIA CONDUIT INTO EQUIPMENT CONNECTION. FIELD COORDINATE AND CONFIRM WITH EQUIPMENT VENDOR.

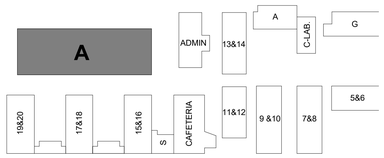


N

LEVEL 1 PLAN - OVERALL

1/8" = 1'-0"

KEY PLAN



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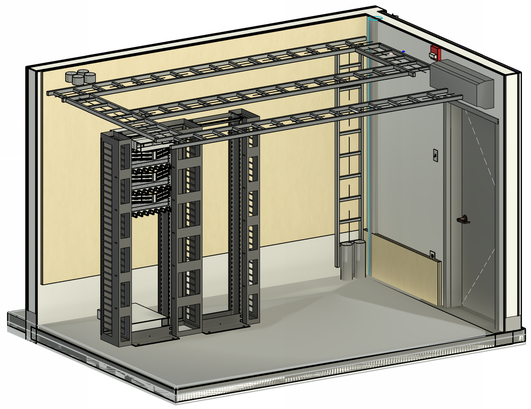
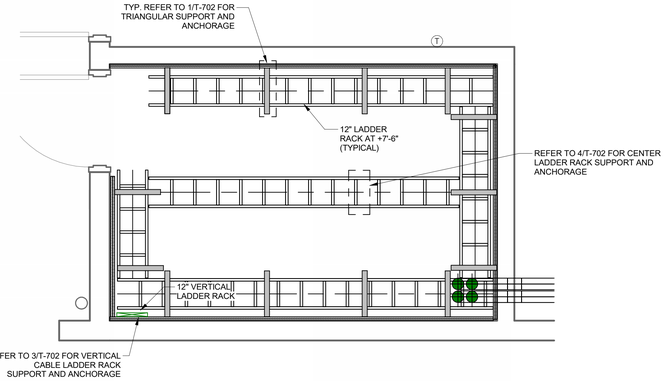
Level 1 Technology Plan - Overall

T-101

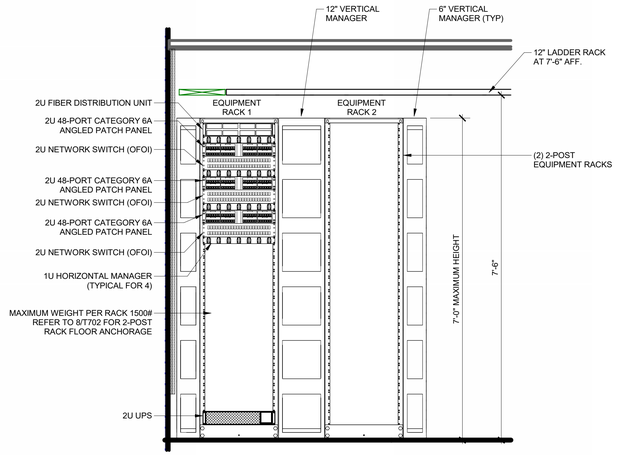


4 IDF ISOMETRIC (FOR REFERENCE ONLY)



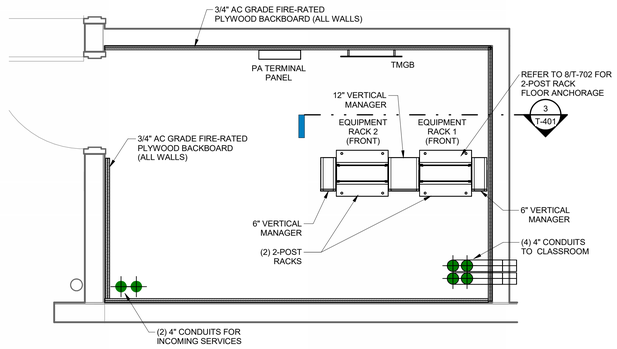
2 ENLARGED IDF CABLE LADDER RACK LAYOUT

1/2" = 1'-0"



3 EQUIPMENT RACK ELEVATION

3/4" = 1'-0"



1 ENLARGED IDF EQUIPMENT LAYOUT

1/2" = 1'-0"

Inglewood Unified School District

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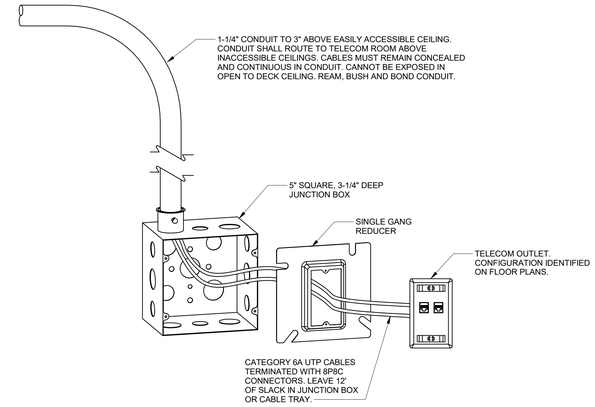
Enlarged Technology Plan

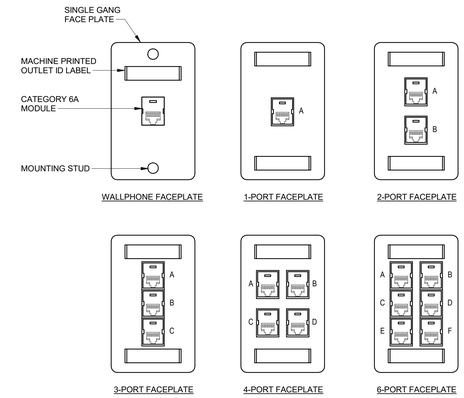
T-401



NOTE:
1. CABLE PATHWAYS FROM THE TELECOM OUTLET TO THE NEAREST TELECOM ROOM SHALL USE CONDUIT ABOVE INACCESSIBLE CEILINGS, CABLE TRAY ABOVE ACCESSIBLE CEILINGS AND MAJOR RUNS AND J-HOOKS FOR AGGREGATING SMALL QUANTITIES OF CABLES IN COMMON AREAS.

2 TYPICAL TELECOM OUTLET DETAIL

NOT TO SCALE



1 WALL MOUNTED OUTLET CONFIGURATIONS

NOT TO SCALE

Inglewood Unified School District

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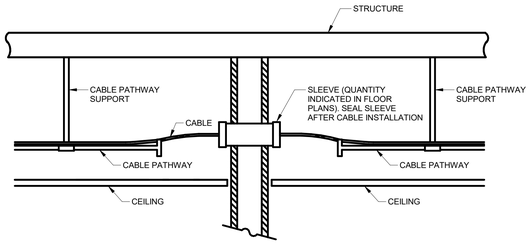
LICENSED ARCHITECT WILLIAM J. MCGINTY C-36143 4/30/2025 STATE OF CALIFORNIA

2023-IU002-002

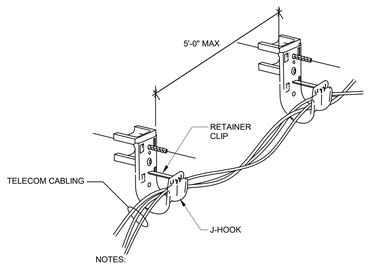
Technology Details

T-701



NOTE:
PENETRATIONS OF FIRE-RATED PARTITIONS, WALLS OR FLOORS BY DATA AND COMMUNICATION WIRING OR CABLE SHALL BE THROUGH MODULAR, RE-ENTERABLE FIRE STOPPING DEVICE(S) CONTAINING SELF-SEALING INTUMESCENT INSERTS PER SPECIFICATION SECTION "FIRESTOPPING".

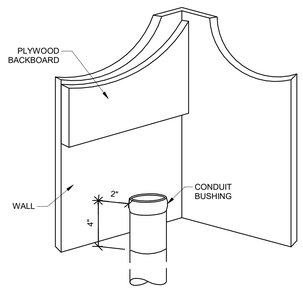
12 THROUGH-WALL PENETRATION DETAIL
NOT TO SCALE



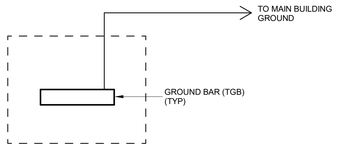
NOTES:

1. PATHWAY FOR WALL MOUNTED J-HOOKS IS ABOVE CEILING BETWEEN OUTLET CONDUITS AND TELECOM ROOM CONDUITS.
2. ANCHOR SIZE SHALL BE DETERMINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION GUIDE. THE LOADS IMPOSED BY THE CABLE SUPPORT SYSTEM SHALL NOT EXCEED 100 LBS. PER FOOT. PROVIDE DEDICATED J-HOOKS FOR TELECOM. CABLING
3. TO APPLY WITHIN EASILY ACCESSIBLE DROPPED/COVERED CEILING ONLY.

11 J-HOOK MOUNTING DETAILS
NOT TO SCALE



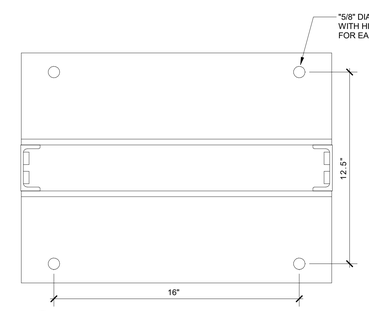
10 CONDUIT STUB-UP DETAIL
NOT TO SCALE



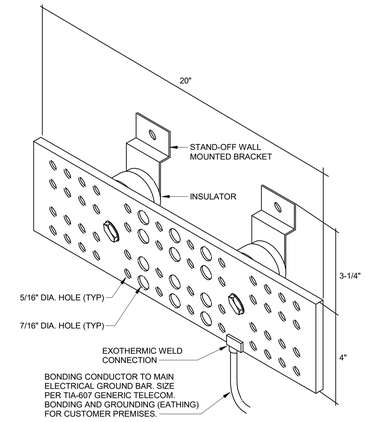
GROUND WIRE LENGTH LINEAR FT.	SIZE (AWG)
LESS THAN 13	6 (0.162 IN)
13 TO 20	4 (0.232 IN)
20 TO 26	3 (0.260 IN)
26 TO 33	2 (0.292 IN)
33 TO 44	1 (0.332 IN)
44 TO 52	1/0 (0.373 IN)
52 TO 66	2/0 (0.419 IN)
66 TO 84	3/0 (0.470 IN)
85 TO 105	4/0 (0.528 IN)
106 TO 125	250 kcmil (0.575 IN)
126 TO 150	300 kcmil (0.630 IN)
151 TO 75	350 kcmil (0.681 IN)
176 TO 250	500 kcmil (0.813 IN)
251 TO 300	600 kcmil (0.893 IN)
GREATER THAN 300	750 kcmil (0.998 IN)

NOTES:
1. PROVIDE (1) GROUND BUS BAR AS SHOWN.
2. BOND GROUND BUS BAR (TGB) TO THE MAIN GROUND BUS BAR WITH A GROUND WIRE, SIZED FROM CHART.
3. BOND GROUND BUS BAR TO MAIN ELECTRICAL GROUND.
4. BOND GROUND WIRES TO BUS BAR WITH TERMINAL BLOCKS.
5. MAINTAIN MINIMUM BENDING RADIUS IN ROUTING BONDING CONDUCTORS.
6. BONDING CONDUCTORS SHOULD NOT BE SPLICED AT 90 DEGREE BENDS.
7. MOUNT TELECOM GROUND BUS BAR 6" BELOW CABLE RUNWAY IN EACH TELECOM ROOM.
8. PROVIDE GREEN SHEATHED BONDING CONDUCTORS.

9 BONDING AND GROUNDING DIAGRAM
NOT TO SCALE

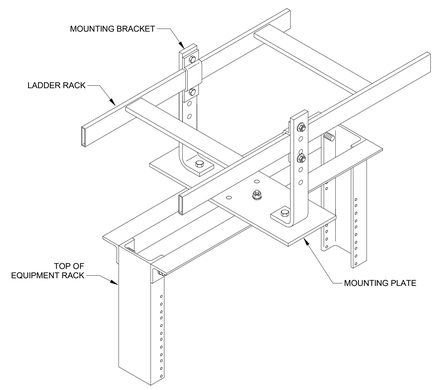


8 2-POST RACK FLOOR ANCHORAGE
NOT TO SCALE

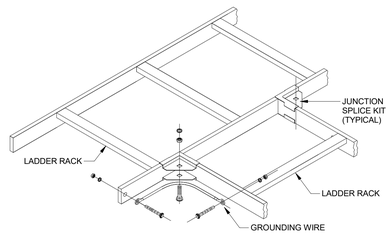


NOTE: TGB SIMILAR BUT ONLY 12" IN LENGTH

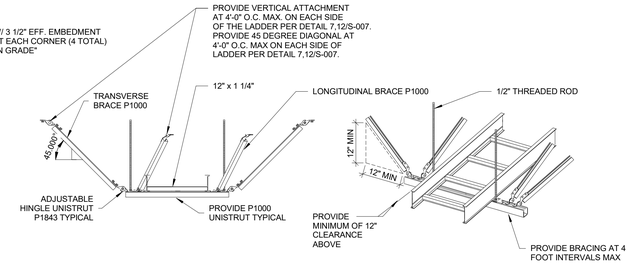
7 TELECOM MAIN GROUNDING BUSBAR (TMGB)
NOT TO SCALE



6 LADDER RACK MOUNTING TO EQUIPMENT RACK
NOT TO SCALE

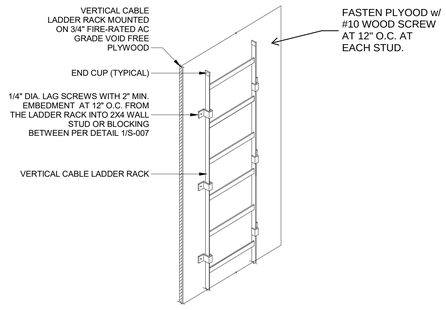


5 LADDER RACK JUNCTION SPLICE KIT & GROUNDING
NOT TO SCALE

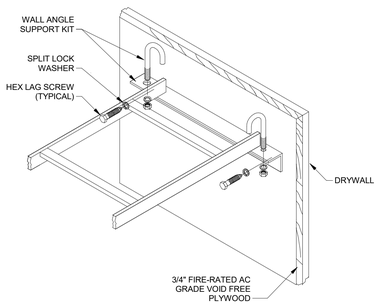


1. SHALL BE BONDED TO GROUND.
2. LOCATE SEISMIC BRACING WHERE REQUIRED AND RECOMMENDED BY THE MANUFACTURER. AT A MINIMUM, BRACING SHALL BE PROVIDED AT ENDS. CONNECTION POINTS BETWEEN TRAY SECTIONS, BENDS, DIRECTIONAL CHANGES, AND CHANGES IN CABLE TRAY ELEVATIONS. CONTRACTOR SHALL SUBMIT SHOP DRAWING SHALL BE CERTIFIED BY CONTRACTOR'S. STRUCTURAL ENGINEER INDICATING COMPLIANCE WITH SEISMIC ZONE 4 REQUIREMENTS.
3. MINIMUM REQUIREMENTS:
   a. RUNGS SHALL BE SPACED EVERY 6".
   b. STRAIGHT SECTIONS SHALL BE PROVIDED IN 12'-0" LENGTHS.
   c. WIDTH SHALL BE 12".
   d. LOADING DEPTH SHALL BE 1 1/4".

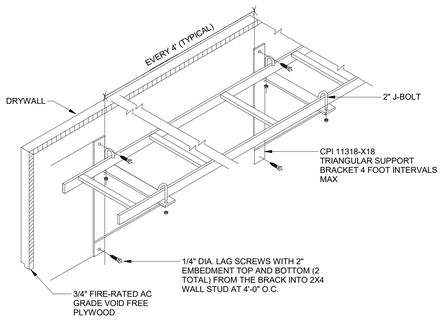
4 LADDER RACK SUPPORT AND ANCHORAGE DETAIL
NOT TO SCALE



3 12" VERTICAL LADDER RACK DETAIL
NOT TO SCALE



2 LADDER RACK WALL ANGLE SUPPORT KIT
NOT TO SCALE



1 LADDER RACK WITH TRIANGULAR BRACKET SUPPORT AT WALL
NOT TO SCALE

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Technology Details

T-702