

PARKING ANALYSIS: BESSIE OWENS

LOT	TOTAL STALLS	REQ'D ACCESSIBLE STALLS	PROVIDED ACCESSIBLE STALLS	COVERED STANDARD STALLS	RATIO: COVERED TO UNCOVERED	REQ'D COVERED ACCESSIBLE STALLS	PROVIDED COVERED ACCESSIBLE STALLS
1	36	2	2	0	0%	0	0
2	36	2	2	0	0%	0	0

EVCS ANALYSIS: BESSIE OWENS

LOT	TOTAL STALLS	REQ'D EVCS STALLS	REQ'D VAN ACCESSIBLE EVCS STALLS	REQ'D STD ACCESSIBLE EVCS STALLS	PROVIDED EVCS STALLS	PROVIDED VAN ACCESSIBLE EVCS STALLS	PROVIDED STD ACCESSIBLE EVCS STALLS
1	36	2	1	0	4	1	0
2	36	2	1	0	0	0	0

NEW PHOTOVOLTAIC ARRAY CODE ANALYSIS: BESSIE OWENS ELEMENTARY

SYSTEM DESCRIPTION: Module Type JAM72D30 550/MB (2278mm x 1134mm x 35mm) 31.8 kg

Array Name	Array	Total Modules	kW DC	No. of Cols	Minimum Clear Height	Azimuth	Tilt	Occupancy	Const. Type	Area	Allowable Area
A	4 x 35	140	77.00	4	11'-0"	180°	5°	E NS	II-B	3,939 SF	-
										TOTAL AREA ARRAY 'A':	3,939 SF
B	4 x 35	140	77.00	4	11'-0"	180°	5°	E NS	II-B	3,939 SF	14500
										TOTAL AREA ARRAY 'B':	3,939 SF
C	6 x 23	138	75.90	3	13'-6"	270°	7°	S-2 NS	II-B	3,884 SF	UNLIMITED
										TOTAL AREA ARRAY 'C':	3,884 SF
D1	6 x 23	138	75.90	3	13'-6"	180°	7°	S-2 NS	II-B	3,884 SF	
D1	6 x 23	138	75.90	3	13'-6"	180°	7°	S-2 NS	II-B	3,884 SF	
D1	6 x 23	138	75.90	3	13'-6"	180°	7°	S-2 NS	II-B	3,884 SF	
										TOTAL AREA ARRAY 'D':	11,652 SF
										TOTAL PROJECT AREA:	23,414 SF

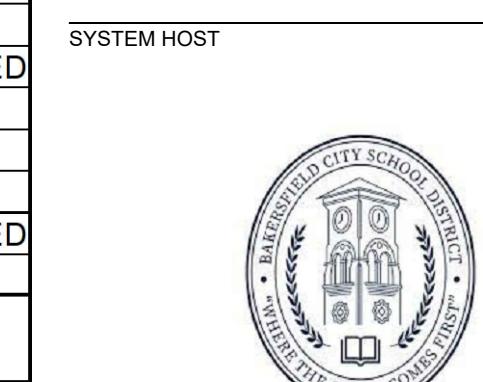
PER CBC 406.5.5 AREA AND HEIGHT INCREASES: OPEN PARKING GARAGES OF TYPE II CONSTRUCTION, WITH ALL SIDES OPEN, SHALL BE UNLIMITED IN ALLOWABLE AREA WHERE THE BUILDING HEIGHT DOES NOT EXCEED 75'.

SHEET NOTES

1. SEE SHEET A1.0 FOR ARRAY DIMENSIONS
2. SEE SHEET A1.2 FOR ACCESSIBILITY PLAN SHOWING NEW AND EXISTING ACCESSIBLE CONDITIONS
3. SEE ELECTRICAL SITE PLAN FOR POC INFORMATION AND LOCATION
4. ARROWS ON PLAN POINT TO LOW SIDE OF CANOPY

BUILDING LEGEND

1. (E) BLDG A - MPR/KITCHEN - A# 51488, 03-120134
2. (E) BLDG B - ELECTRICAL - A# 51488, 03-120098
3. (E) BLDG C - CLASSROOM - A# 51488, 03-120098
4. (E) BLDG D - CLASSROOM - A# 51488, 03-120098
5. (E) BLDG E - CLASSROOM - A# 51488, 03-120098
6. (E) ACC. BOYS & GIRLS RESTROOMS - A# 51488, 03-120098
7. (E) BLDG F - CLASSROOM - A# 51488, 03-120098
8. (E) BLDG G - ADMINISTRATION - A# 03-120098
9. (E) BLDG H - CLASSROOM - A# 03-120098
10. (E) BLDG J (J1/J2) - CLASSROOM - A# 03-120098
- 10A. (E) ACCESSIBLE STAFF TOILETS - A# 03-120098
11. (E) BLDG L - CLASSROOM - A# 03-120098
12. (E) BLDG M - CLASSROOM - A# 03-120098
13. (E) RESTROOM RR & CLASSROOMS R42-R44- A# 03-115432
14. (E) R45 - CLASSROOM - A# 03-116953
15. (E) R46-R48 - CLASSROOM - A# 03-117157
16. (E) R57 - ADMINISTRATION - A# 03-120134
17. (E) BLDG K1 - KINDERGARTEN - A# 03-120240
18. (E) BLDG K2 - KINDERGARTEN - A# 03-120240
19. (E) BLDG K3 - KINDERGARTEN - A# 03-120240
20. (E) BLDG K4 - KINDERGARTEN - A# 03-120240



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POWER
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NO. REVISION DATE

DATE: 03.11.2025

PROJECT
BARKERSFIELD CITY
SCHOOL DISTRICT
Bessie Owens

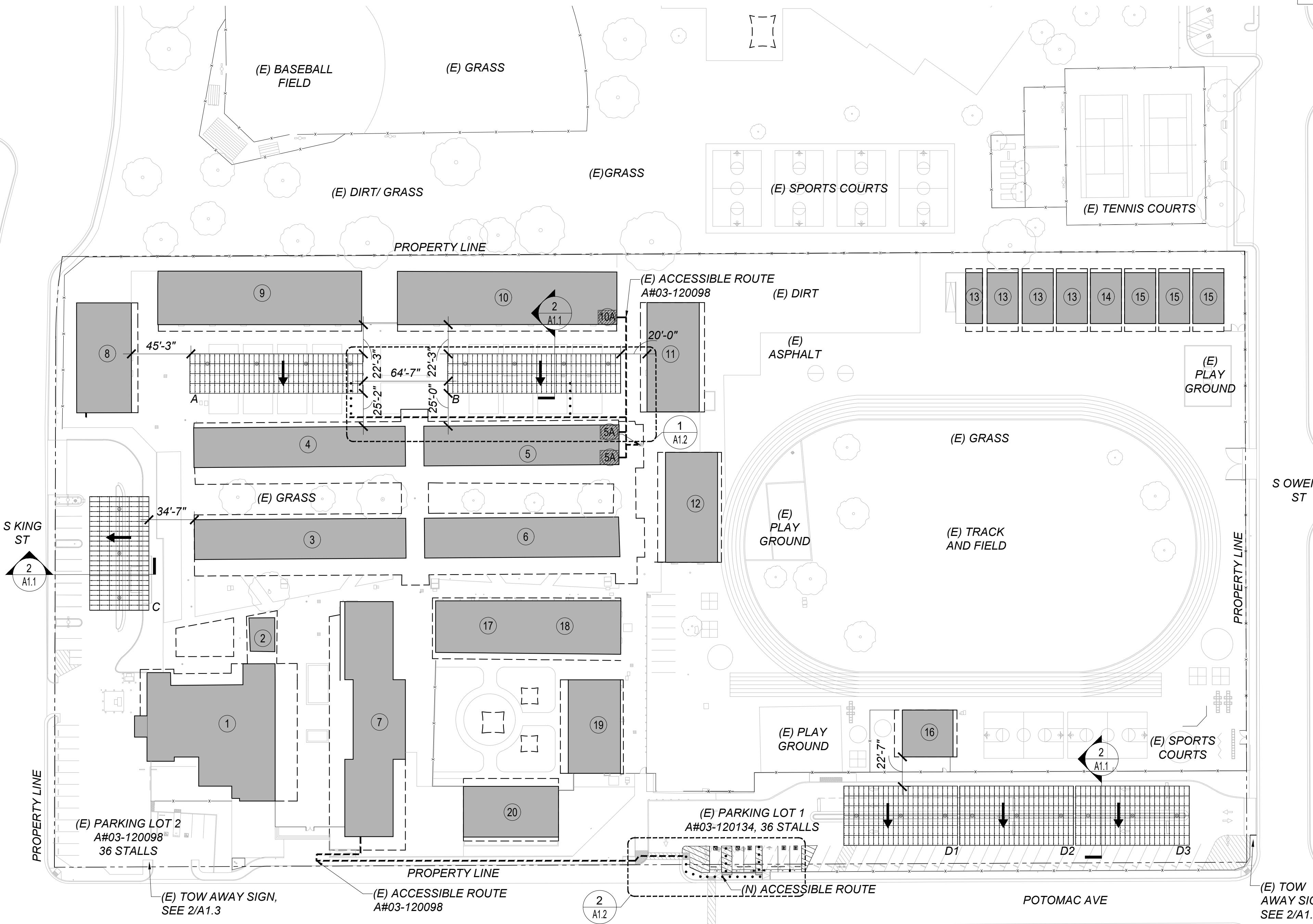
815 Potomac Avenue
Bakersfield, CA 93307

FPP PROJECT #
CA-19-0206
SHEET TITLE

SITE PLAN

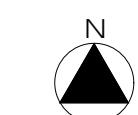
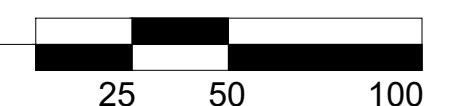
SHEET NO.:

A1.0



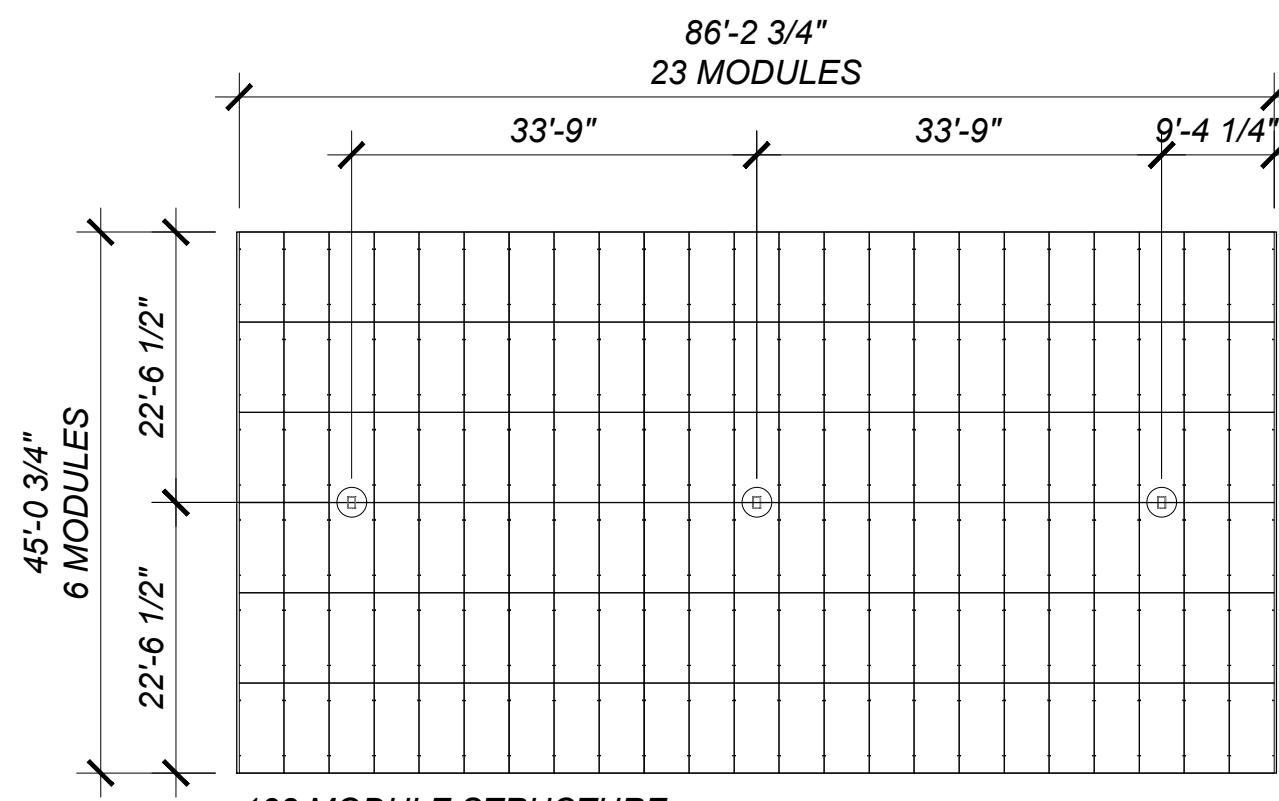
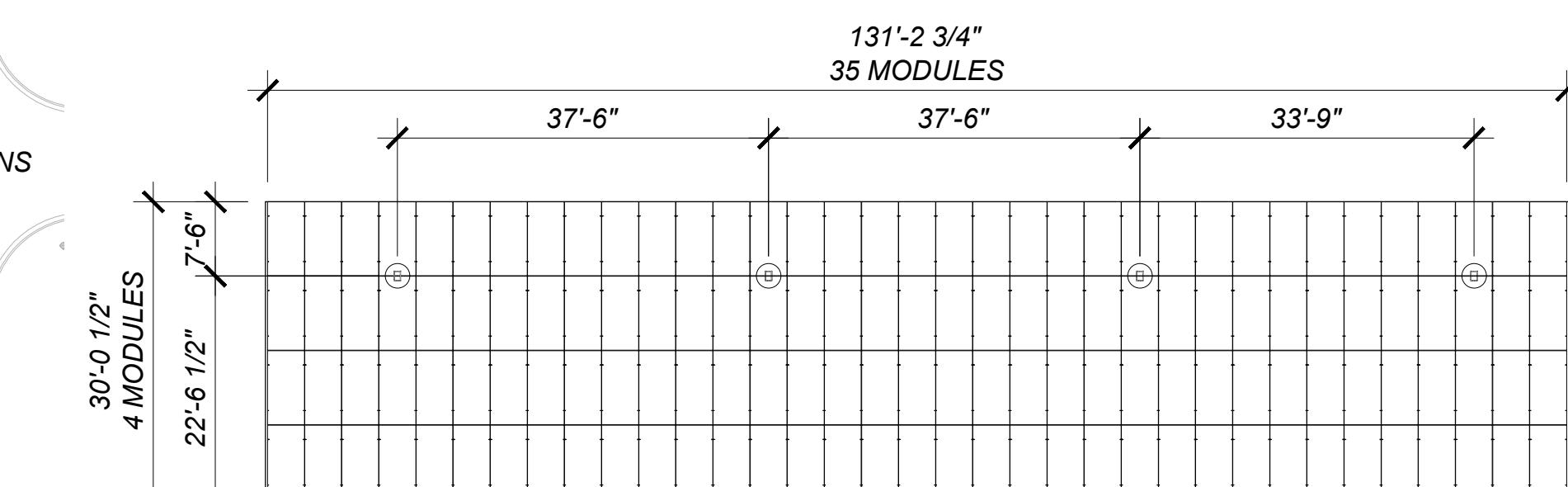
1 SITE PLAN

Scale: 1" = 50' (FOR 24X36 SHEETS)



2 ARRAY LAYOUTS

Scale: 1/16" = 1'-0" (FOR 24X36 SHEETS)



DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT:

"Design Professional in General Responsible Charge Statement: The POT identified in these construction documents meets the requirements of the current applicable California Building Code (CBC) accessibility provisions for path of travel requirements for alterations, additions and structural repairs. As part of the design of this project, the POT was examined and any elements, components or portions of the POT that were determined to be noncompliant with the CBC have been identified and the corrective work necessary to bring them into compliance has been included within the scope of this project's work through details, drawings and specifications incorporated into these construction documents. Any noncompliant elements, components or portions of the POT that will not be corrected by this project based on valuation threshold limitations or a finding of unreasonable hardship are indicated in these construction documents."

During construction, if POT items within the scope of the project represented as code compliant are found to be nonconforming beyond reasonable construction tolerances, they shall be brought into compliance with the CBC as a part of this project by mean of a construction change document.

ACCESSIBILITY NOTES:

1. ACCESSIBLE ROUTE AS INDICATED ON PLAN IS A BARRIER-FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL OF CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAX SLOPE, OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAX, AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE, FIRM AND SLIP RESISTANT. CROSS SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED. ACCESSIBLE ROUTE SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80". ARCHITECT OF RECORD SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL.

2. SEE SITE PLAN FOR MORE INFORMATION ON ACCESSIBLE ROUTE.

ACCESSIBLE PARKING AND ACCESSIBLE ROUTE REQUIREMENTS:

1. (N) ACCESSIBLE ROUTE INDICATED BY DOTS:



2. (E) ACCESSIBLE ROUTE INDICATED BY DASHED LINE:



(N) & (E) ACCESSIBLE ROUTE REQUIRES:

5% DIRECTIONAL SLOPE MAX.
2% CROSS SLOPE MAXIMUM

4. STALLS AND ACCESS AISLES REQUIRE:

2% DIRECTIONAL SLOPE
2% CROSS SLOPE MAX

5. FOR ACCESSIBLE PARKING STRIPING, COLOR, WHEEL STOP, AND ALL OTHER DIMENSIONS, REFER TO SHEET A1.3

6. FOR EV DETAILS AND ALL OTHER DIMENSIONS, REFER TO SHEET A1.4

7. EV ACCESSIBLE STALLS AND ACCESS AISLES REQUIRE:

2% DIRECTIONAL SLOPE
2% CROSS SLOPE MAX

ACCESSIBLE KEYNOTES:

- 1 ACCESSIBLE PARKING SIGN PER 1/A1.3
- 2 NOT USED
- 3 WHEELSTOP PER 3/A1.3
- 4 TYPICAL ACCESSIBLE PARKING STRIPING AND ISA SPECIFICATIONS PER 3/A1.3
- 5 TYPICAL ACCESS AISLE STRIPING SPECIFICATIONS PER 5/A1.3
- 6 ACCESSIBLE CURB RAMP PER 6/A1.3
- 7 TRUNCATED DOMES PER 7/A1.3

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1	36	2	2	0	0%	0	0
2	36	2	2	0	0%	0	0

1 VAN STALL REQUIRED PER LOT: 1 VAN STALL PROVIDED PER LOT

EV PARKING KEYNOTES:

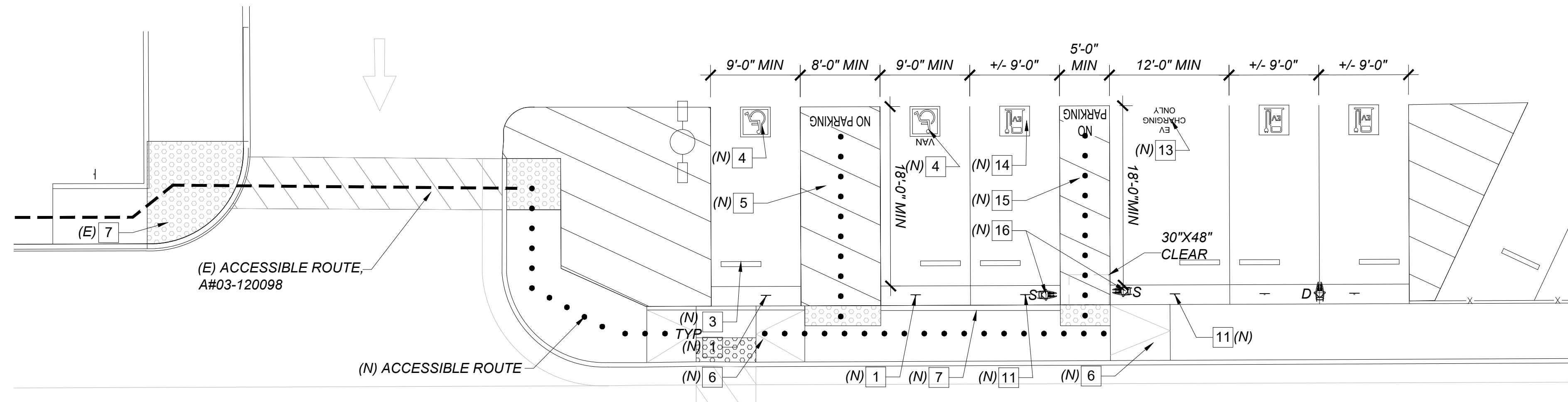
- 11 EV PARKING SIGN PER 1/A1.4
- 12 NOT USED
- 13 TYPICAL EV ACCESSIBLE PARKING STRIPING SPECIFICATIONS PER 3/A1.4
- 14 TYPICAL EV PARKING STRIPING SPECIFICATIONS PER 4/A1.4
- 15 TYPICAL EV ACCESS AISLE STRIPING SPECIFICATIONS PER 5/A1.4
- 16 TYPICAL ACCESSIBLE EV CHARGER DETAIL PER 6/A1.4

EVCS ANALYSIS: BESSIE OWENS

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1	36	2	1	0	4	1	0
2	36	2	1	0	0	0	0

EV NOTES:

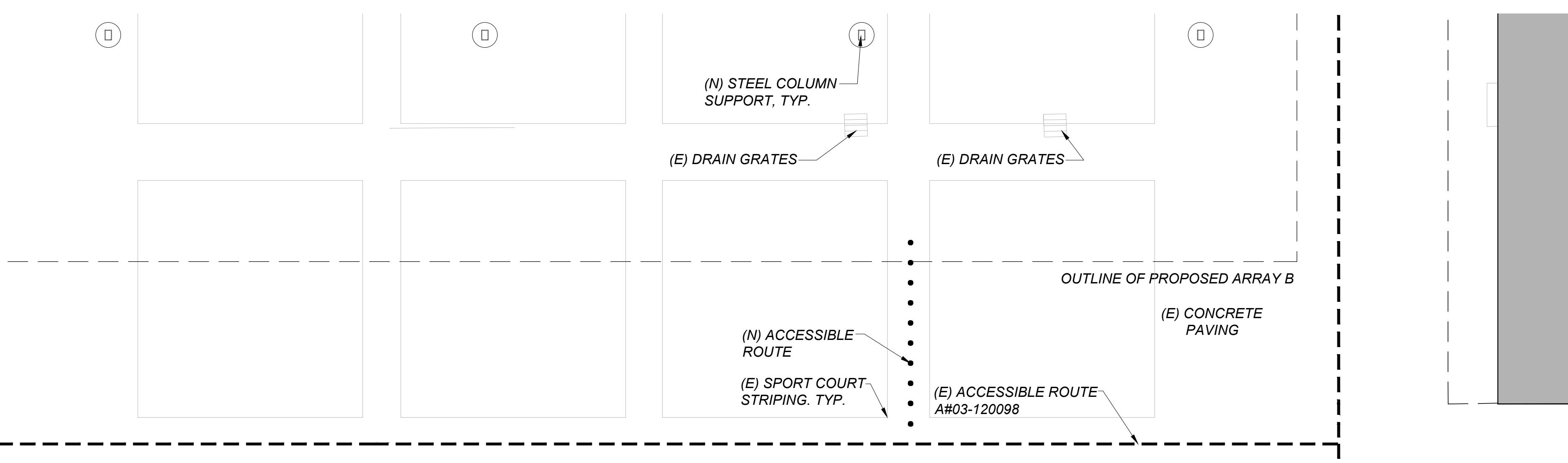
1. EV STALLS ARE CALCULATED INDEPENDENTLY OF STANDARD NON-EV STALLS
2. EV REQUIRED STALLS CONSOLIDATED TO LOT 1 PER DSA IR CG-1 SECTION 2.2



1 ACCESSIBLE PARKING PLAN - LOT 1

Scale: 1/8" = 1' (FOR 24X36 SHEETS)

4 8 16 N

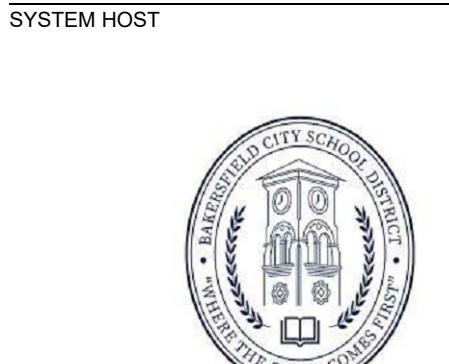


1 ENLARGED SITE PLAN

Scale: 1/8" = 1' (FOR 24X36 SHEETS)

4 8 16 N

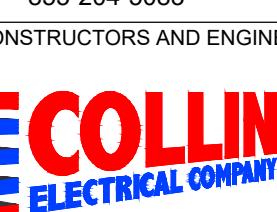
A1.2



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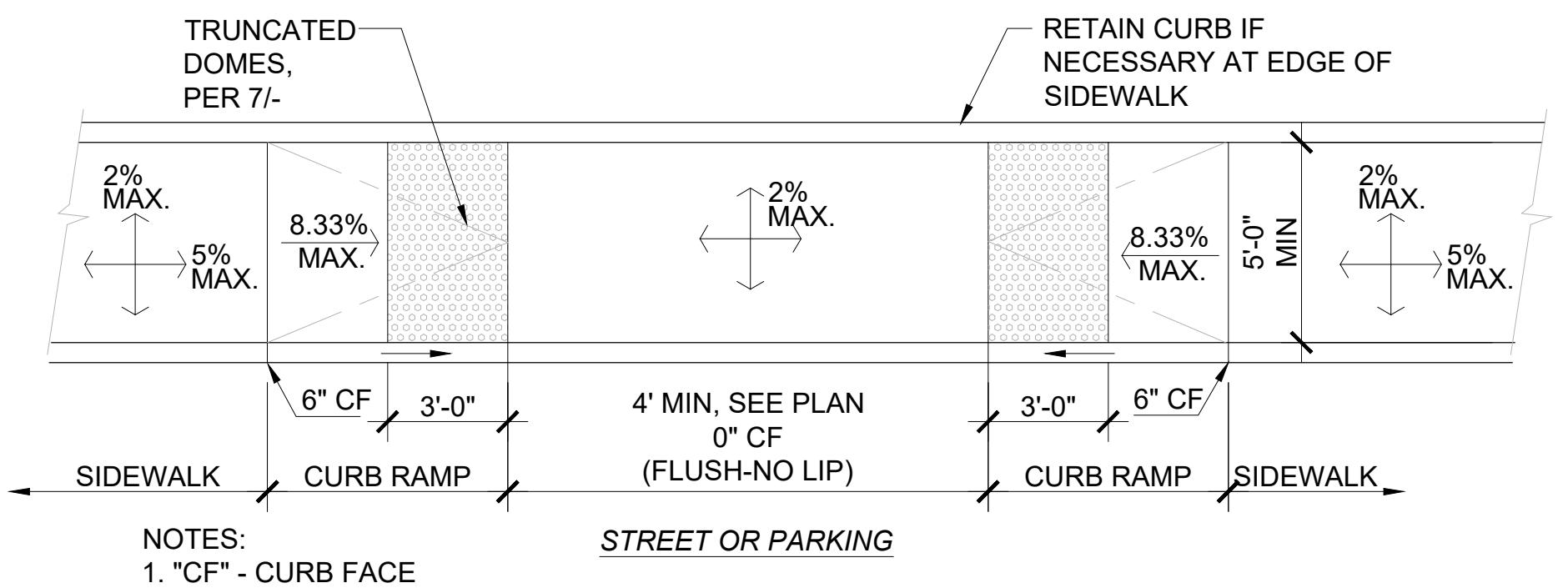
PROJECT
BARKERSFIELD CITY SCHOOL DISTRICT

Bessie Owens
815 Potomac Avenue
Bakersfield, CA 93307

FFP PROJECT # CA-19-0206
SHEET TITLE

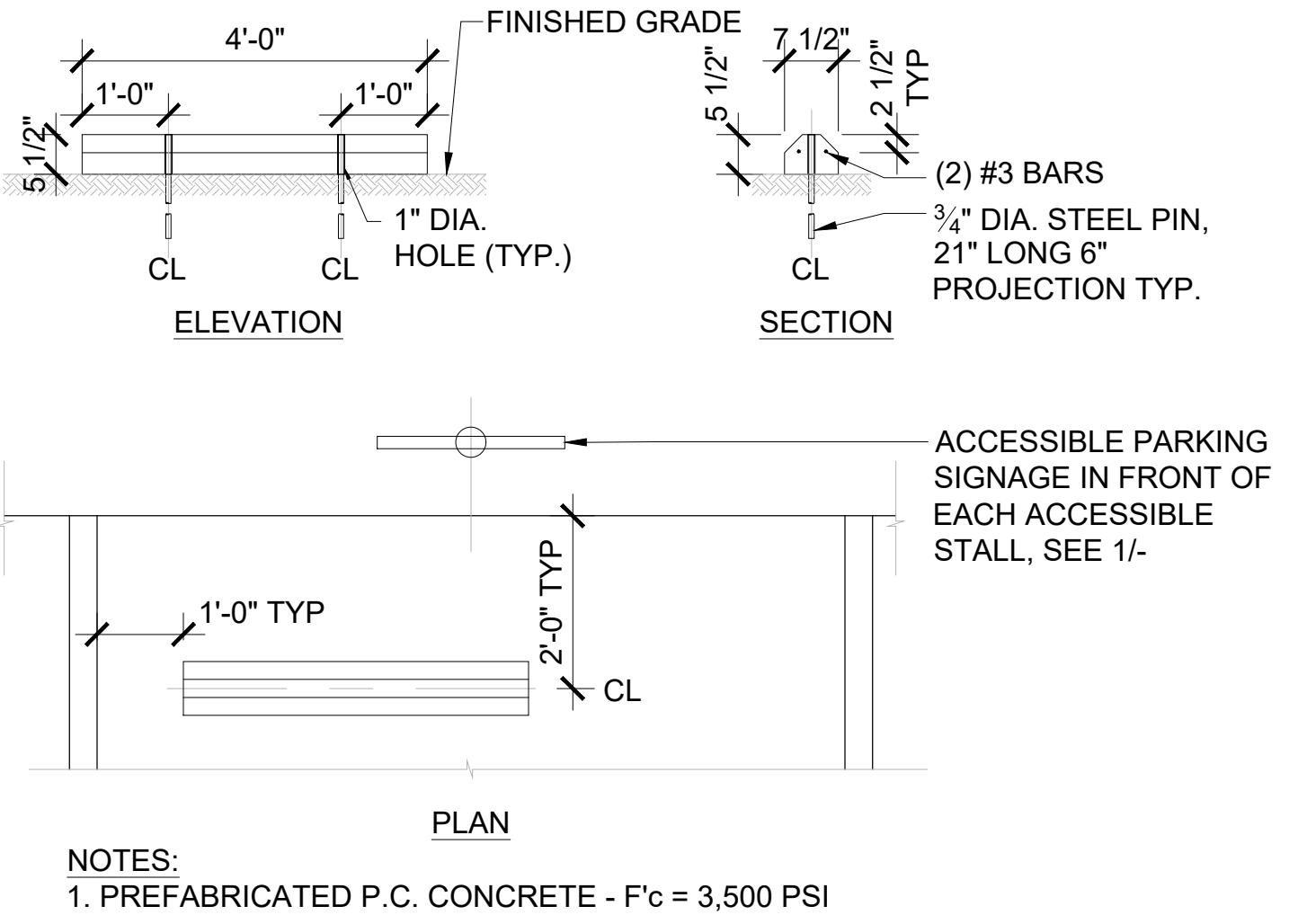
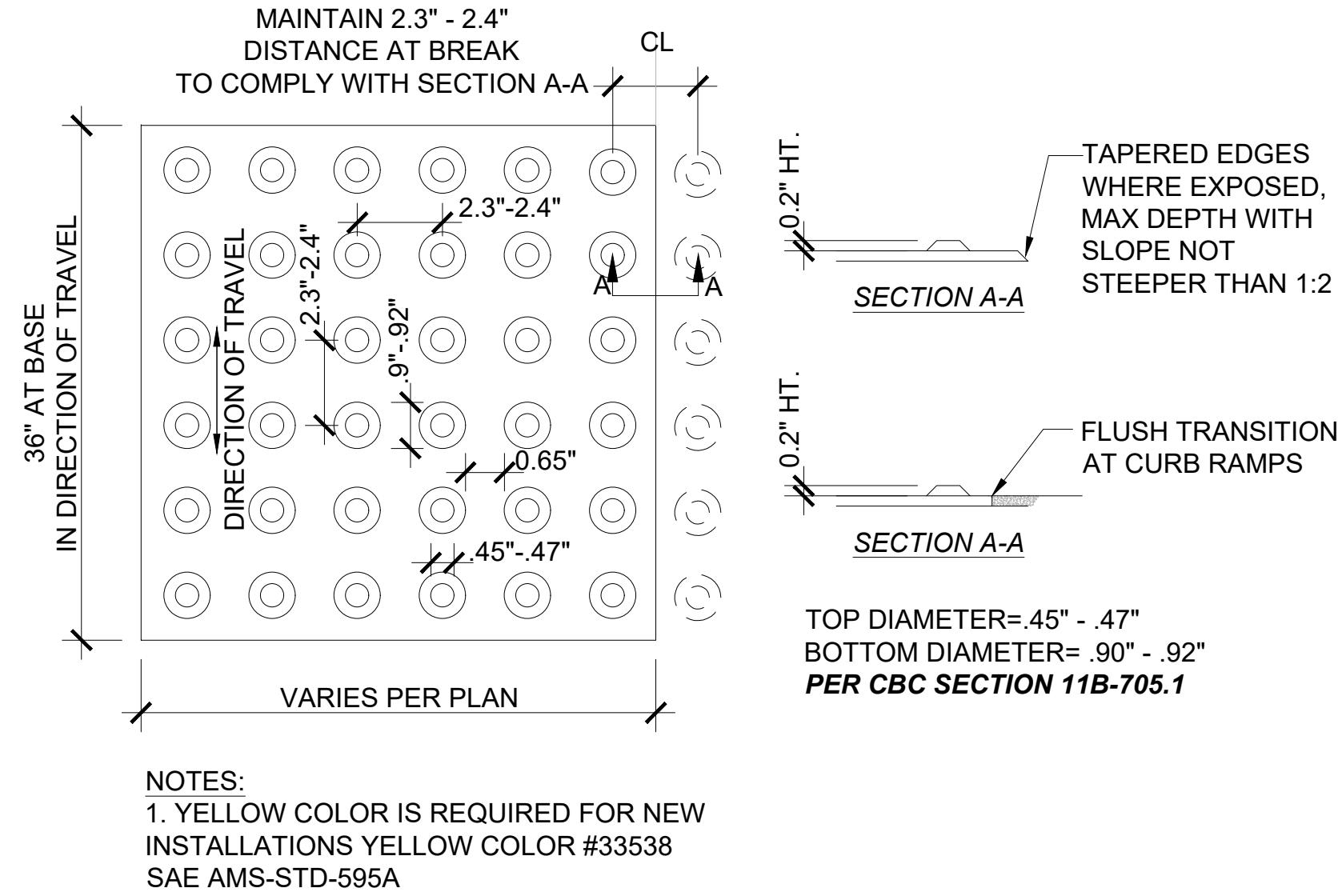
ENLARGED SITE PLAN

SHEET NO.:



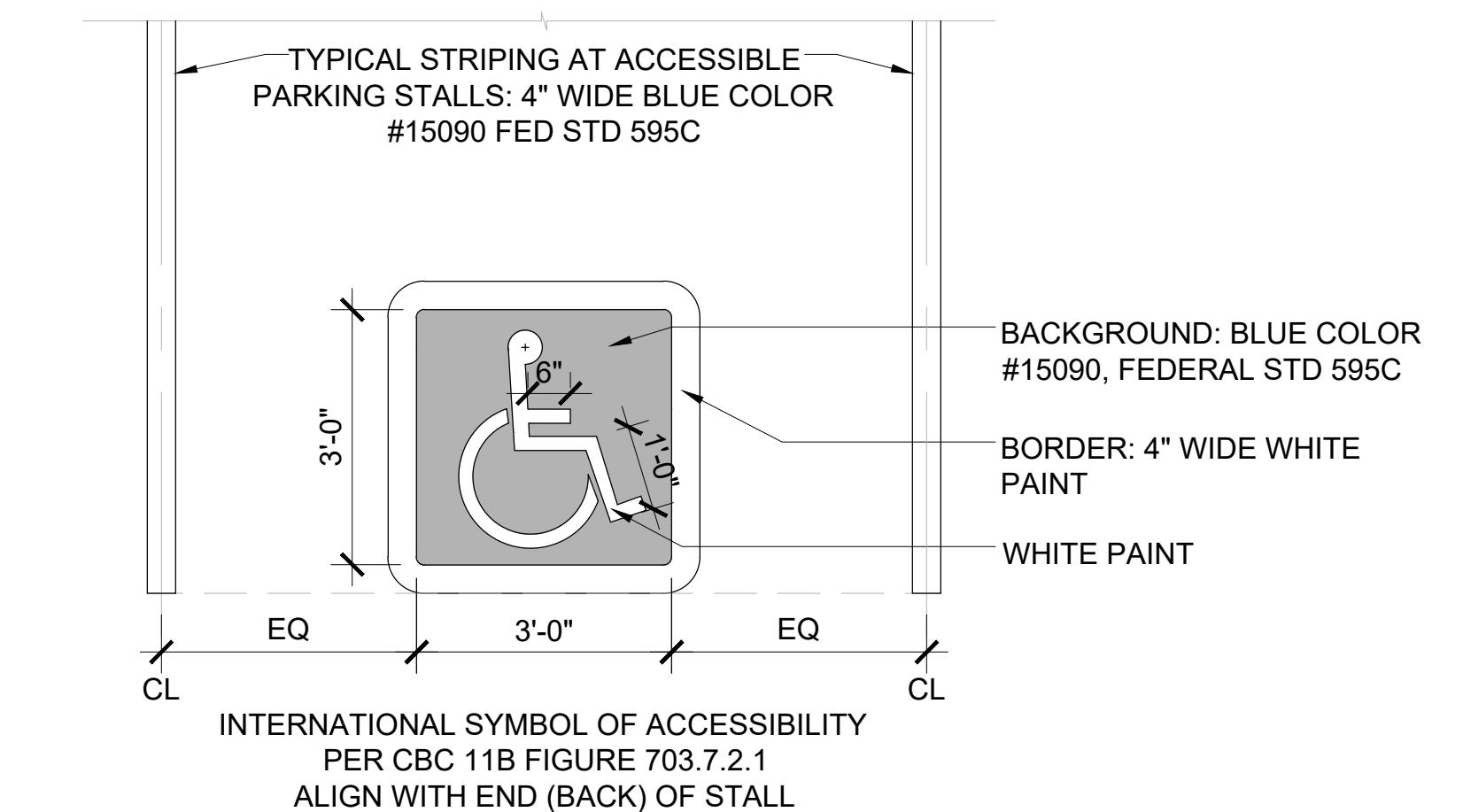
6 ACCESSIBLE CURB RAMP

Scale: 1/4" = 1'



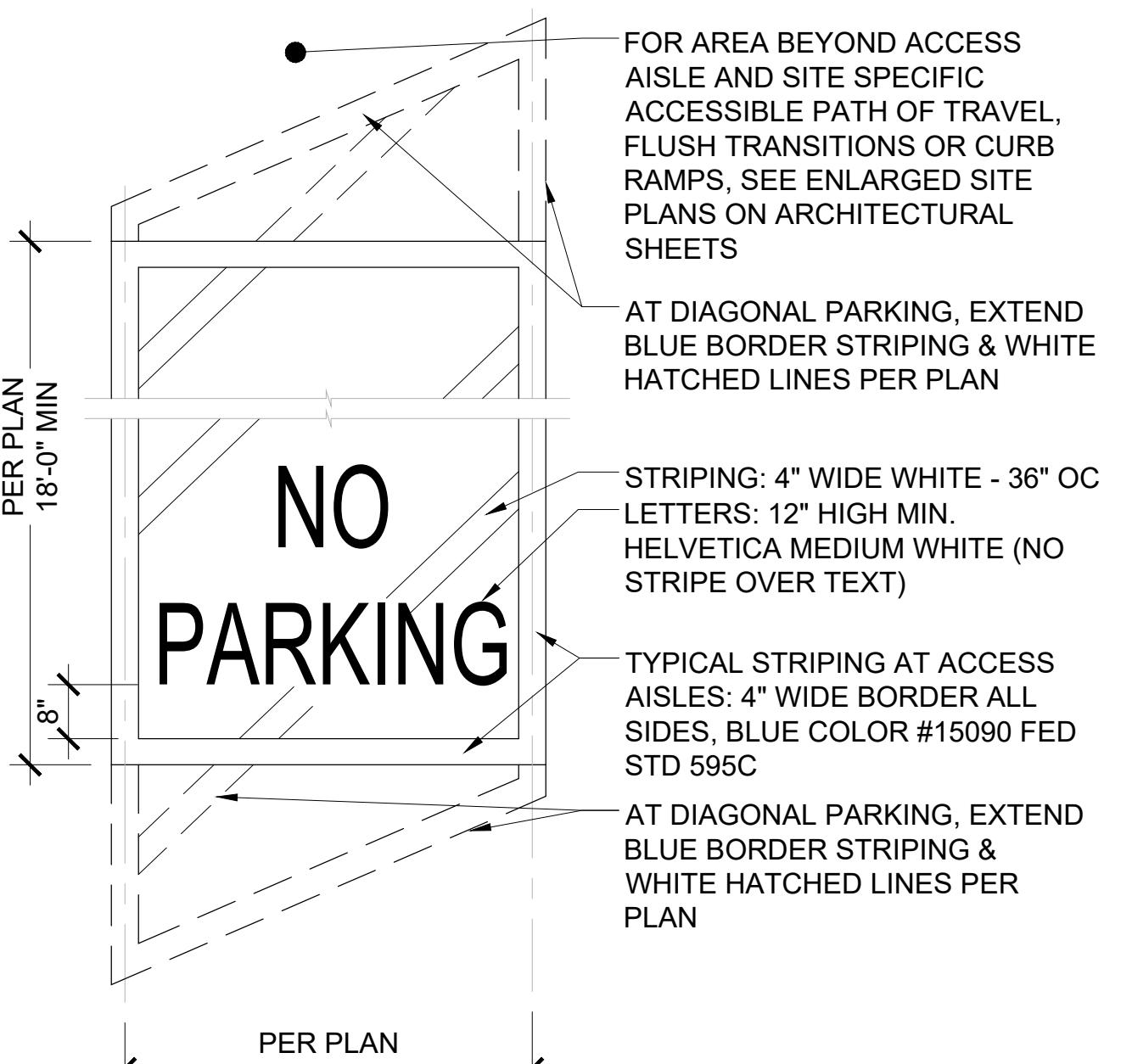
3 CONCRETE WHEEL STOP

Scale: 1/2" = 1'



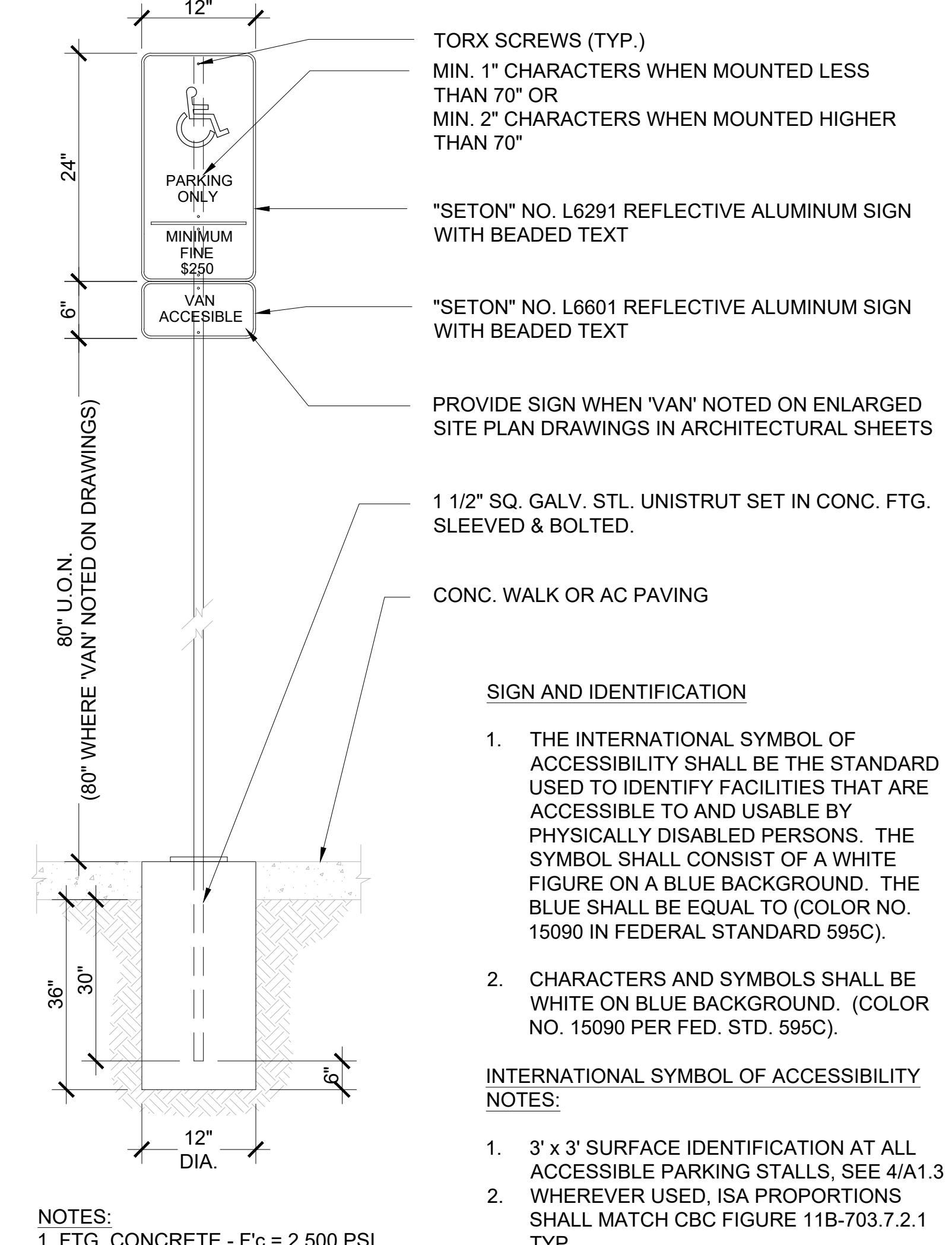
4 ACCESSIBLE PARKING STRIPING

Scale: 1/2" = 1'



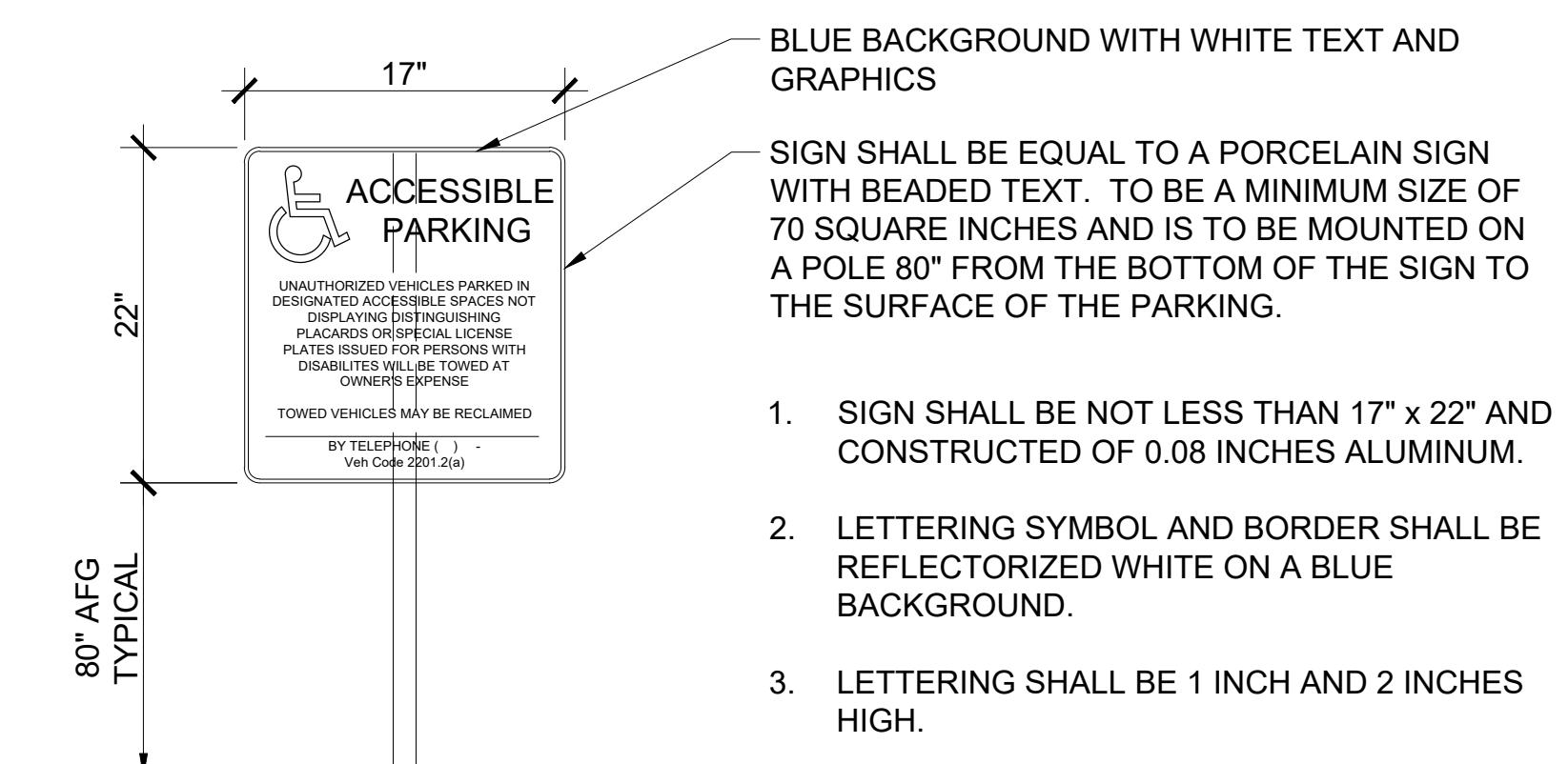
5 ACCESSIBLE ACCESS AISLE STRIPING

Scale: 1/2" = 1'



1 ACCESSIBLE PARKING SIGN

Scale: 1" = 1'



2 SITE ACCESSIBILITY TOW AWAY SIGN

Scale: 1" = 1'

NOTES: 1. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL BE THE STANDARD USED TO IDENTIFY FACILITIES THAT ARE ACCESSIBLE TO AND USABLE BY PHYSICALLY DISABLED PERSONS. THE SYMBOL SHALL CONSIST OF A WHITE FIGURE ON A BLUE BACKGROUND. THE BLUE SHALL BE EQUAL TO (COLOR NO. 15090 IN FEDERAL STANDARD 595C).

SYSTEM HOST



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PROJECT
BARKERSFIELD CITY
SCHOOL DISTRICT
Bessie Owens

815 Potomac Avenue
Bakersfield, CA 93307

FFP PROJECT #
CA-19-0206

SHEET TITLE

ACCESSIBLE
PARKING
STANDARDS

SHEET NO.:

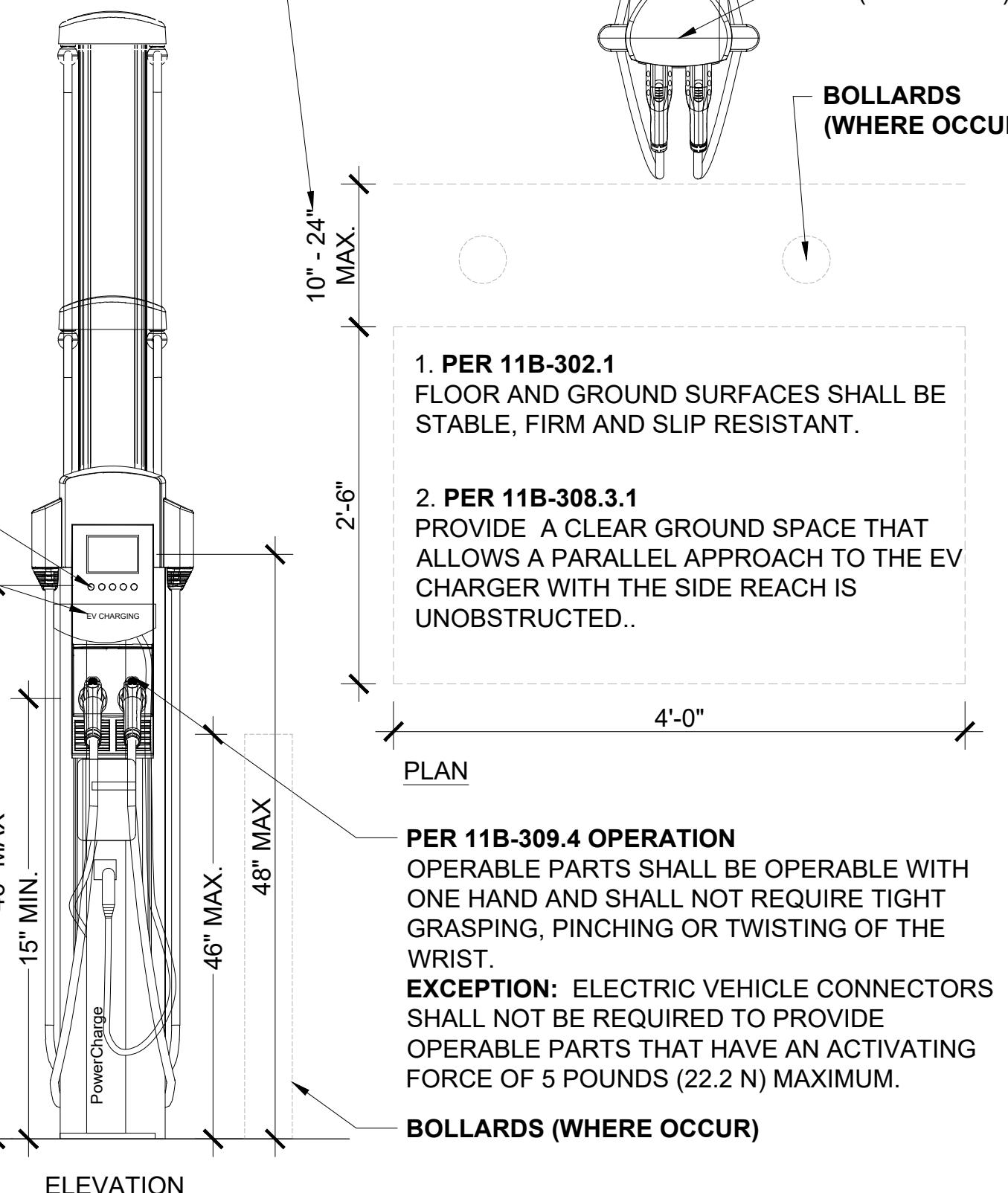
PER 11B-308.3.2 OBSTRUCTED HIGH SIDE REACH
WHERE THE REACH DEPTH EXCEEDS 10 INCHES, THE
HIGH SIDE REACH SHALL BE 46 INCHES MAX. FOR A
REACH DEPTH OF 24 INCHES MAX.

PER 11B-812.4
VEHICLE SPACES,
ACCESS AISLES SERVING
THEM, AND VEHICULAR
ROUTES SERVING THEM
SHALL PROVIDE A
VERTICAL CLEARANCE OF
98 INCHES (2489 MM) MIN.
WHERE PROVIDED,
OVERHEAD CABLE
MANAGEMENT SYSTEMS
SHALL NOT OBSTRUCT
REQUIRED VERTICAL
CLEARANCE.

*POINT-OF-SALE
SYSTEMS -
SEE BELOW

PER 11B-707.7.2
CHARACTERS
DISPLAYED ON THE
SCREEN SHALL BE IN A
SANS SERIF FONT.
CHARACTERS SHALL
BE 3/16 INCH (4.8 MM)
HIGH MIN. BASED ON
THE UPPERCASE
LETTER "I".
CHARACTERS SHALL
CONTRAST WITH
THEIR BACKGROUND
WITH EITHER LIGHT
CHARACTERS ON A
DARK BACKGROUND
OR DARK
CHARACTERS ON A
LIGHT BACKGROUND.

GROUND



* POINT-OF-SALE SYSTEMS

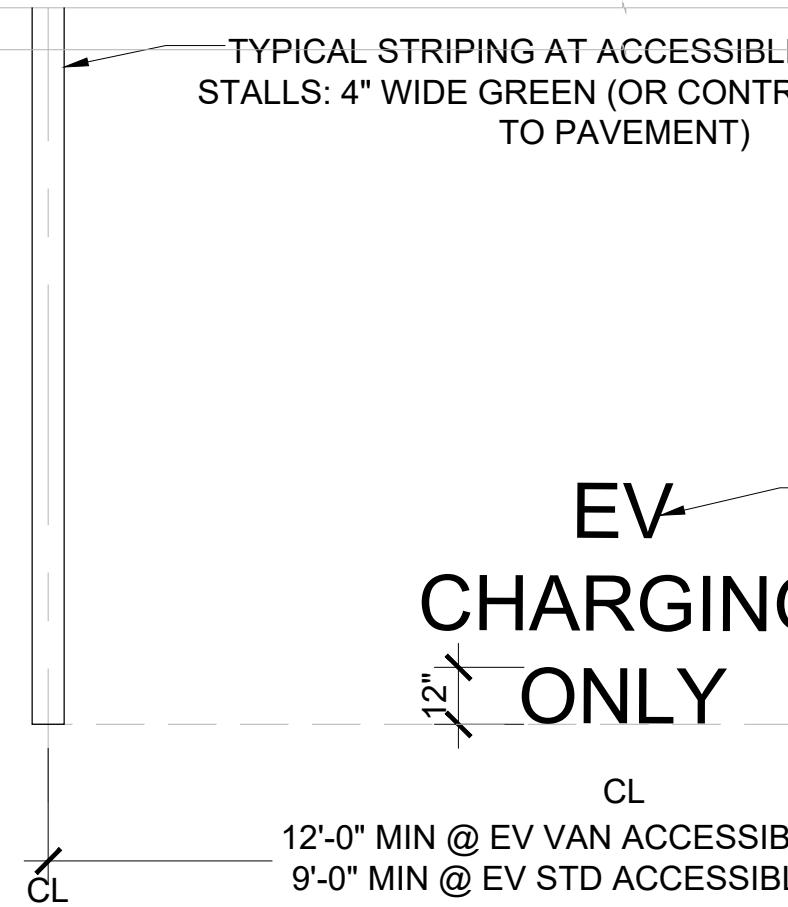
PER 11B-707.9.1.1
A TACTILELY DISCERNIBLE NUMERICAL KEYPAD SIMILAR TO A TELEPHONE KEYPAD CONTAINING A RAISED DOT
WITH A DOT BASE DIAMETER BETWEEN 1.5 MM AND 1.6 MM AND A HEIGHT BETWEEN 0.6 MM AND 0.9 MM ON THE
NUMBER 5 KEY THAT ENABLES A VISUALLY IMPAIRED PERSON TO ENTER HIS OR HER OWN PERSONAL
IDENTIFICATION NUMBER OR ANY OTHER PERSONAL INFORMATION NECESSARY TO PROCESS THE TRANSACTION
IN A MANNER THAT PROVIDES THE OPPORTUNITY FOR THE SAME DEGREE OF PRIVACY INPUT AND OUTPUT
AVAILABLE TO ALL INDIVIDUALS.

PER 11B-707.9.1.2 OTHER TECHNOLOGY

OTHER TECHNOLOGY, SUCH AS A RADIO FREQUENCY IDENTIFICATION DEVICE, FINGERPRINT BIOMETRICS OR
SOME OTHER MECHANISM THAT ENABLES A VISUALLY IMPAIRED PERSON TO ACCESS THE VIDEO TOUCH SCREEN
DEVICE WITH HIS OR HER PERSONAL IDENTIFIER AND TO PROCESS HIS OR HER TRANSACTION IN A MANNER THAT
PROVIDES THE OPPORTUNITY FOR THE SAME DEGREE OF PRIVACY INPUT AND OUTPUT AVAILABLE TO ALL
INDIVIDUALS. WHERE A VIDEO SCREEN OVERLAY IS PROVIDED IT SHALL BE EQUIPPED WITH A TACTILELY
DISCERNIBLE NUMERICAL KEYPAD COMPLYING WITH SECTION 11B-707.9.1.1.

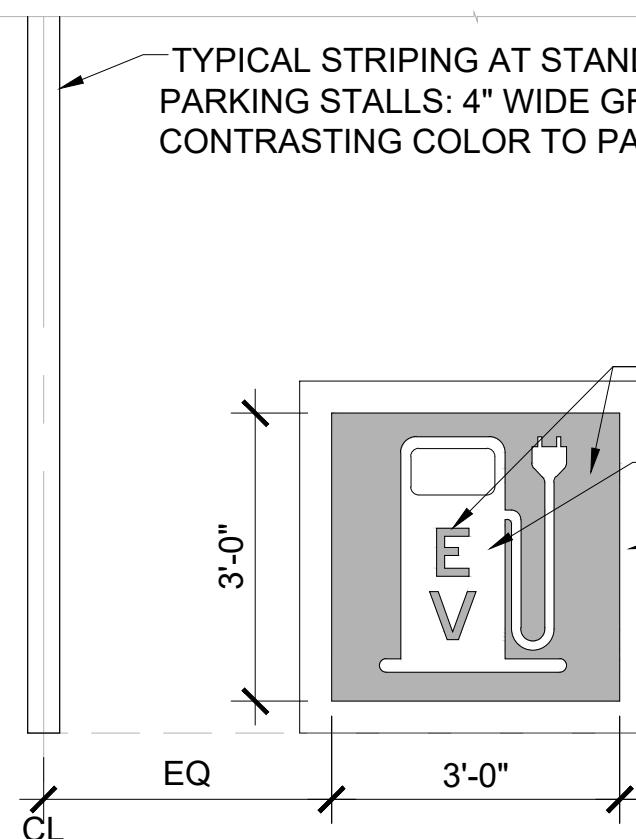
6 ACCESSIBLE EV CHARGER DETAIL

Scale: 1" = 1'



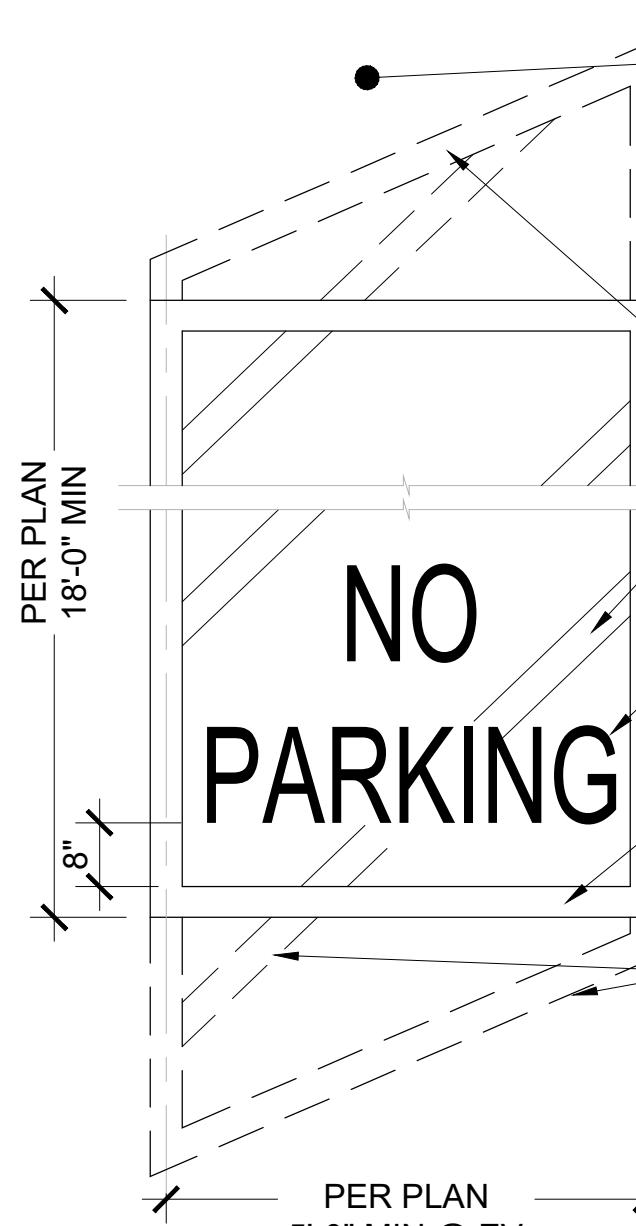
3 ACCESSIBLE PARKING STRIPING - EV

Scale: 1/2" = 1'



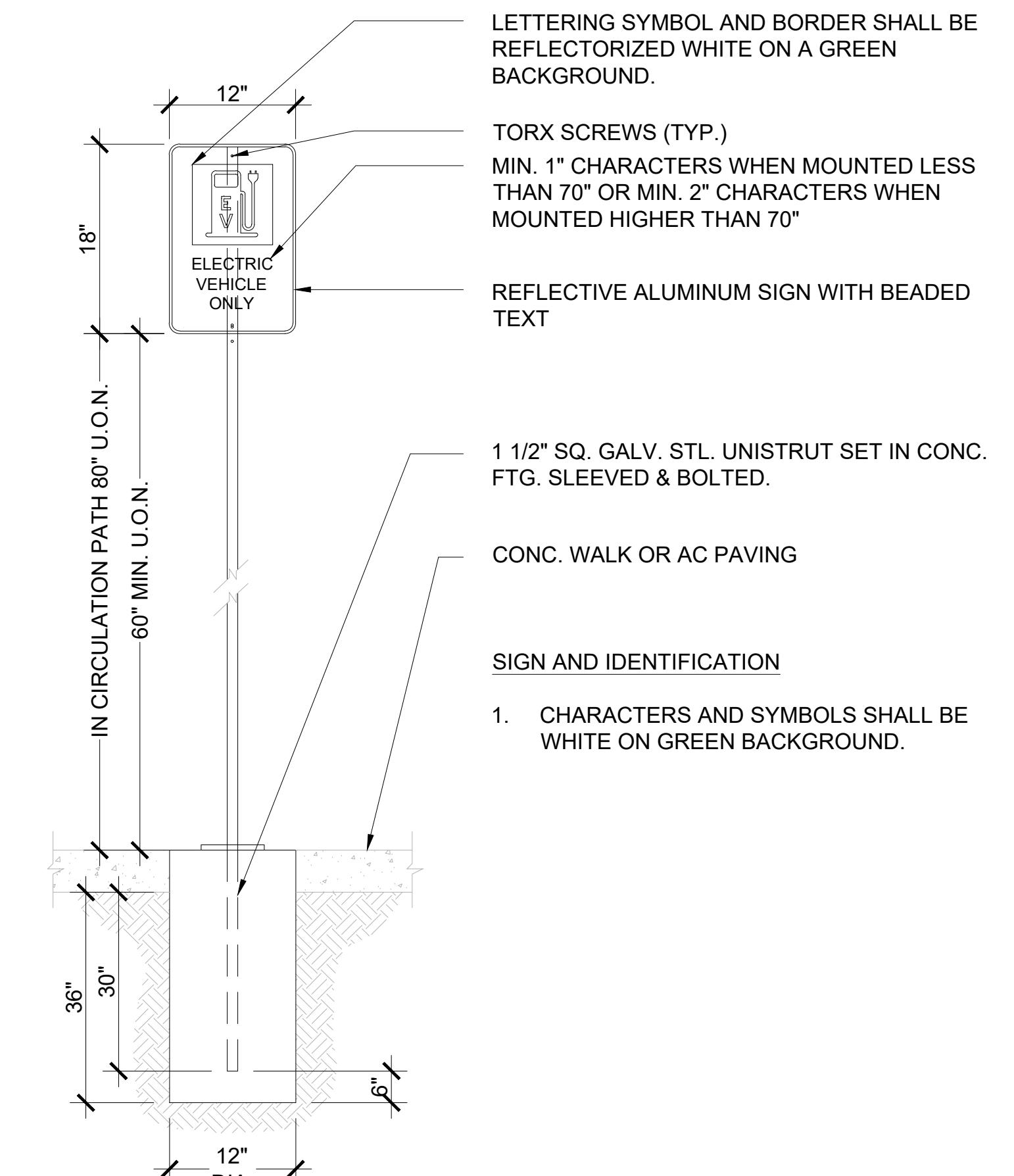
4 STANDARD (NON-ACCESS) PARKING STRIPING - EV

Scale: 1/2" = 1'



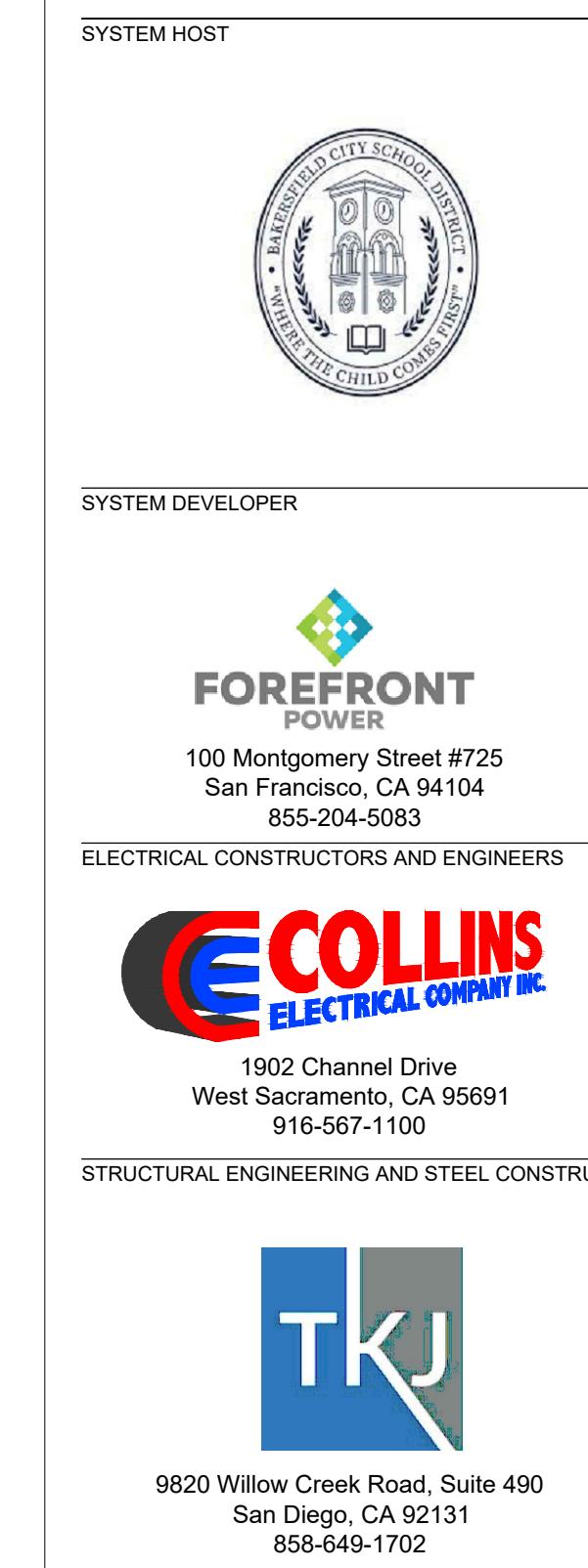
5 ACCESSIBLE ACCESS AISLE STRIPING - EV

Scale: 1/2" = 1'



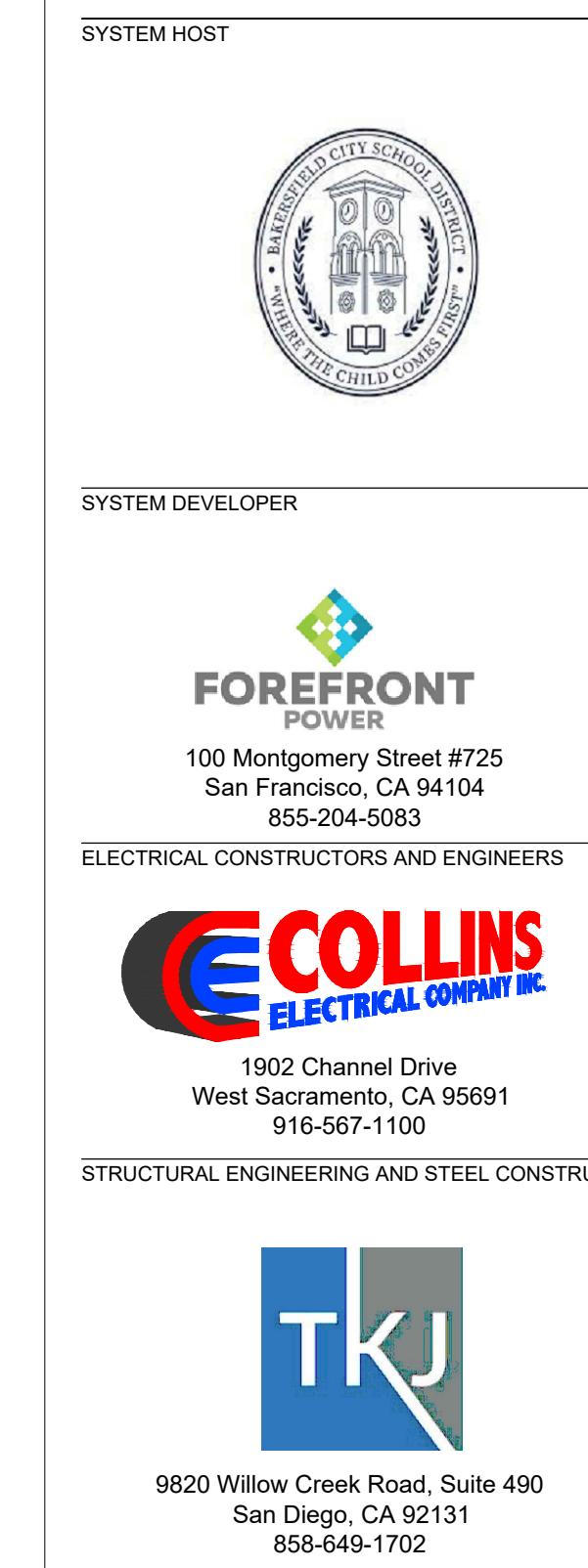
1 PARKING SIGN - EV

Scale: 1" = 1'



2 NOT USED

Scale: -



LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	MODEL NO.	SOURCE	WATTS	VOLT	MOUNTING
A	ILP	WTZ4-4L-U-40-RAFL-C6/3W-BD50 (OR EQUAL)	LED	29	120-277	SURFACE, CARPORT STEEL

NOTE:
DISCONNECT & REMOVE (2) EXISTING PARKING LOT LIGHTS, (1) POLE, & (1) CONCRETE BASE. PROVIDE (8) NEW TYPE (A) LIGHT FIXTURES & CONNECT TO EXISTING CONTROLLED EXTERIOR LIGHTING CIRCUIT(S). VERIFY VOLTAGE, FOR 480V OPERATION ORDER WITH 480V OPTION. OCCUPANCY SENSOR TO DIM LIGHT FIXTURE TO 50% DURING UN-OCCUPIED TIMES.

ELECTRICAL SYMBOLS:

— CONDUIT OR CABLE RUN ABOVE GRADE	CIRCUIT BREAKER
— NEW CONDUIT OR CABLE RUN UNDERGROUND	DISCONNECT SWITCH AS NOTED
— EXISTING CONDUIT RUN UNDERGROUND TO REMAIN	FUSE
— EXISTING TO BE REMOVED	METER
— CONDUIT STUB OUT	EXISTING
— A-2 HOMERUN OF CONDUIT AND WIRING, CIRCUIT NO. 2 TO PANEL 'A'	NEW
— POWER EQUIPMENT AS NOTED	FEEDER SCHEDULE ON SHEET E2.1
— INVERTER AS NOTED	PARKING LOT LIGHT, POLE, & CONCRETE BASE
— JUNCTION BOX	LED LIGHT FIXTURE, SURFACE MOUNTED
— GROUND	EV CHARGING STATION
— TRANSFORMER	

GENERAL ELECTRICAL NOTES:

1. ALL WORK AND MATERIAL SHALL CONFORM TO 2022 CBC, DSA IR 16-8, 2022 CEC ARTICLE 690 & OTHER APPLICABLE ARTICLES, CODES AND ORDINANCES. IT IS THE INTENTION OF THESE PLANS AND SPECIFICATIONS TO COVER ALL THINGS REQUIRED TO PROVIDE COMPLETE AND OPERATIVE SYSTEMS.
2. ALL EQUIPMENT TO HAVE TESTING LABORATORY LABEL ATTACHED.
3. CONDUCTORS SHALL BE THWN COPPER (CU) UNLESS INDICATED AS ALUMINUM (AL).
4. ELECTRICAL ROUTING IS DIAGRAMMATIC ONLY. ACTUAL ROUTING & PHYSICAL CONDITION MAY VARY. CONTRACTOR TO DETERMINE ACTUAL ROUTING AND PROVIDE ALL RECONNECTIONS & ITEMS NECESSARY FOR COMPLETE & OPERATING SYSTEMS.
5. ALL SOLAR ELECTRICAL EQUIPMENT TO BE UL 1741 LISTED, IEE 1547 RATED, & APPROVED BY THE CALIFORNIA ENERGY COMMISSION.
6. ELECTRICAL EQUIPMENT (BRANDS "OR EQUAL" NOTE REQUIRED), OR EQUAL MATERIALS NEED TO BE APPROVED BY OWNER OR OWNER'S REPRESENTATIVE. LAYOUT LOCATIONS ARE REPRESENTATIVE AND ARE SUBJECT TO CHANGE WITH APPROVAL OF OWNER AND PERMITTING AUTHORITY, ETC.
7. PROVIDE "WARNING: PHOTOVOLTAIC POWER SOURCE" AFFIXED LABEL ON PV CONDUIT RUNS, BOXES, & CONDUIT BODIES INSIDE BUILDING.
8. STRING 1000V DC UL4703 (PV-WIRE) CABLE SHALL BE SUPPORTED TO MODULE & ARRAY STRUCTURE WITH WILEY ACME CABLE CLIPS.
9. ALL INVERTER DC STRING FUSES ARE 25 AMP UNLESS NOTED OTHERWISE.
10. HORIZONTAL DIRECTIONAL BORING OR TRENCHING FOR UNDERGROUND CONDUIT RUNS.
11. WHERE FEEDER CONDUCTORS ARE OVERRSIZED FOR VOLTAGE DROP, PROVIDE CONDUCTOR REDUCING MEANS TO ACCOMMODATE INVERTER, PANEL, & DISCONNECT LUGS, SIZED PER CEC AMPACITY REQUIREMENTS. THE MINIMUM CONDUCTOR SIZE, FOR CIRCUIT BREAKERS LISTED FOR 75C TERMINATING, SHALL BE:
60kW INVERTER #1, #6 GND. (AL)
12. REFER TO SHEETS E5.0 & E5.1 FOR REQUIRED SOLAR EQUIPMENT WARNING LABELING. REFER TO SHEET E1.0 FOR SOLAR EQUIPMENT LABELING LOCATIONS.

SYSTEM HOST



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DATE:

03.05.25

PROJECT

BAKERSFIELD CITY
SCHOOL DISTRICT
Bessie Owens

815 Potomac Ave
Bakersfield, CA 93307

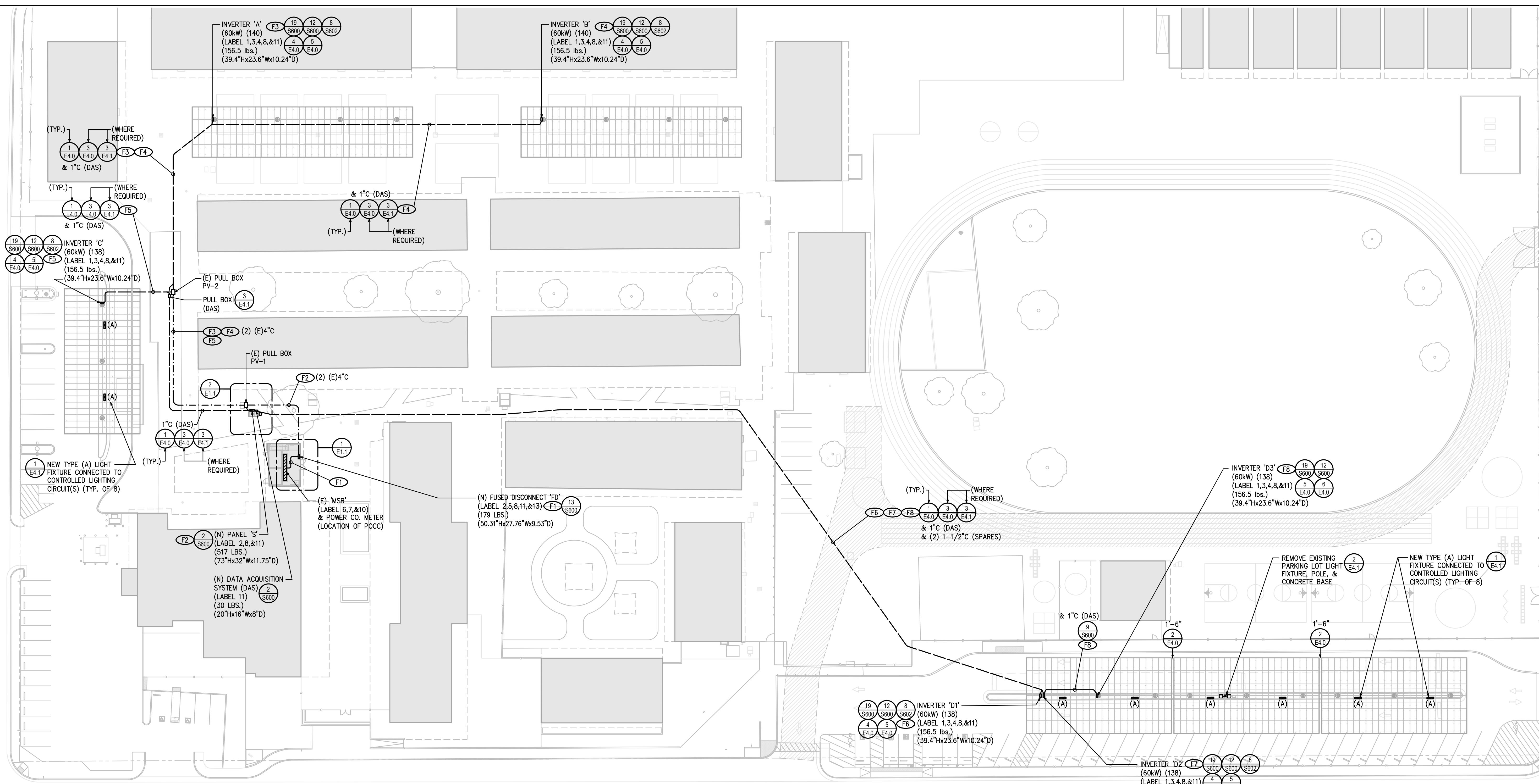
FPP PROJECT #
CA-19-0206

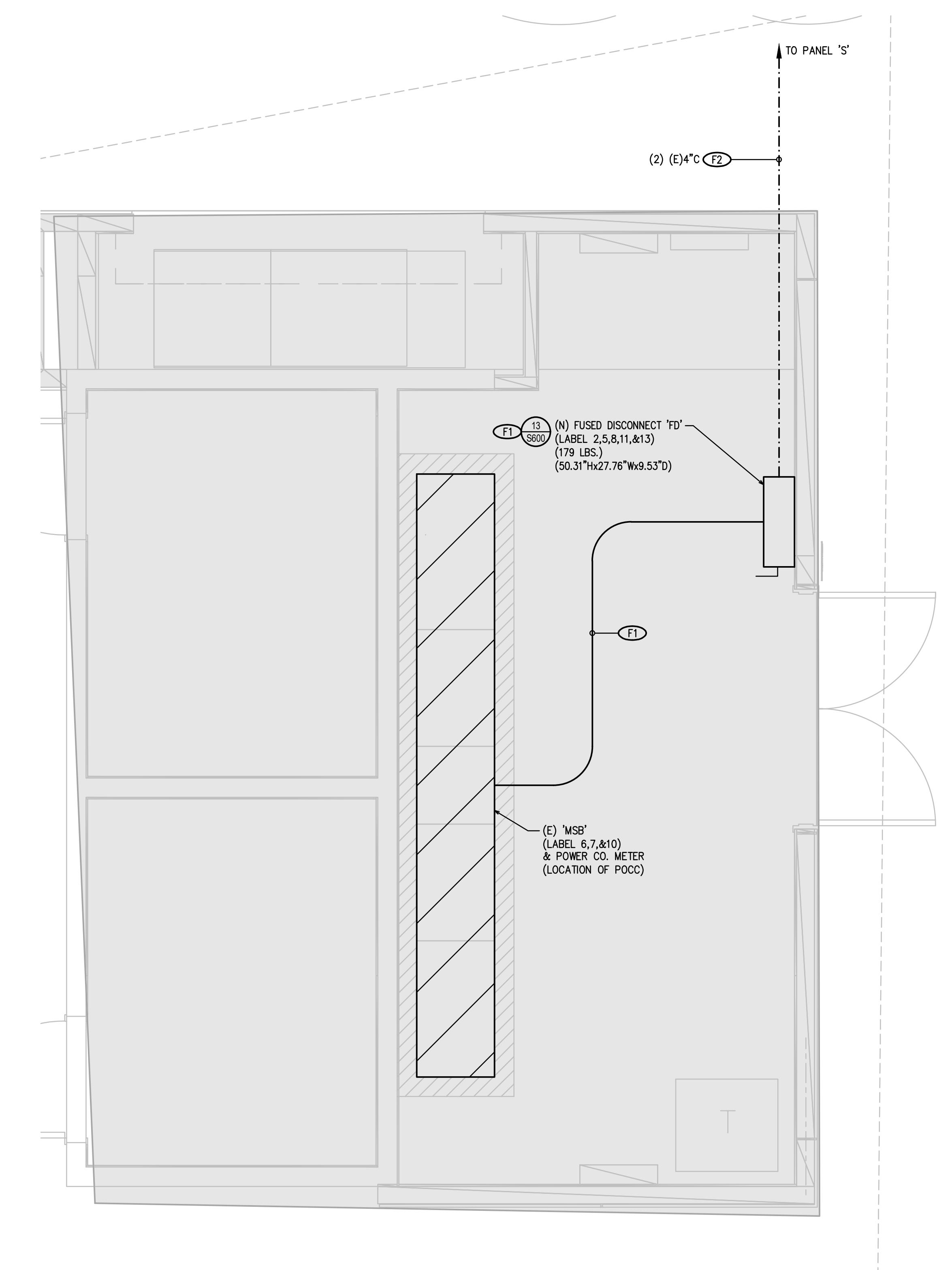
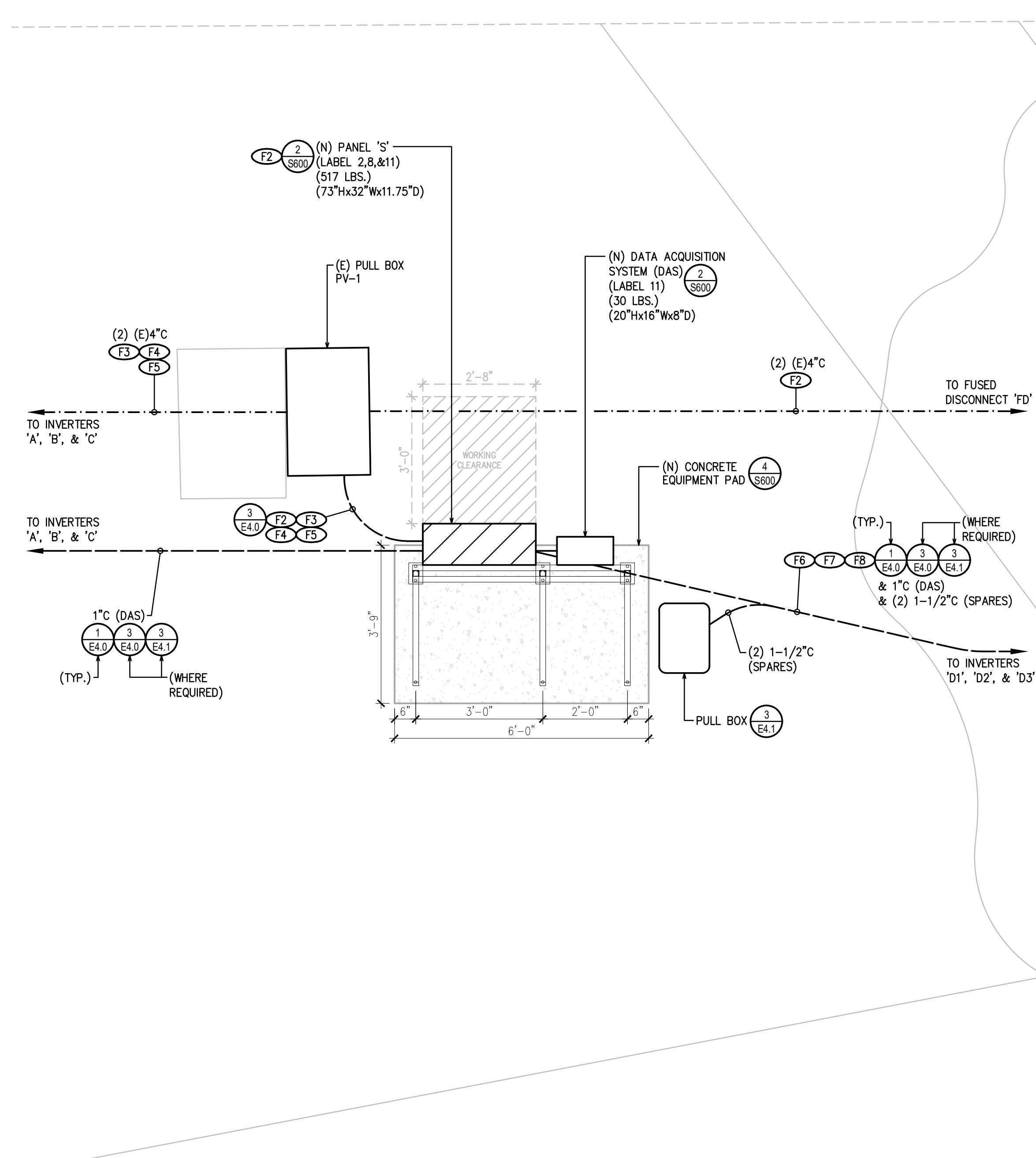
SHEET TITLE

PV SYSTEM
ELECTRICAL SITE
PLAN

SHEET NO.:

E1.0





SYSTEM HOST



SYSTEM DEVELOPER

FOREFRONT
POWER
100 Montgomery Street #725
San Francisco, CA 94104
855-204-5083

ELECTRICAL CONTRACTORS AND ENGINEERS

E COLLINS
ELECTRICAL CONTRACTORS INC.
1902 Channel Drive
West Sacramento, CA 95691
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STRUCTURAL ENGINEERING

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ARCHITECT / ENGINEER OF RECORD

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

NO. REVISION DATE

DATE:
03.05.25

PROJECT
**BAKERSFIELD CITY
SCHOOL DISTRICT**
Bessie Owens

815 Potomac Ave
Bakersfield, CA 93307

FPP PROJECT #
CA-19-0206

SHEET TITLE
**PV SYSTEM
ENLARGED
ELECTRICAL SITE
PLANS**

SHEET NO.:

E1.1

EV CHARGING SYSTEM FEEDER SCHEDULE

No.	Potential at Origin (PI) (Volts)	System	Design Current (Amps)	Raceway Type	Sets of Cond.	Conductor Trade Size	Conductor Cross-Sectional Area (CM)	Conductor Material	DC Conductor Material Constant (K)	Q	Distance (ft)	Voltage Drop (VD) (Volts)	Potential at Load (PL) (Volts)	Percent Voltage Drop (%VD)	Total Voltage Drop (%Vd AC)	Conduit & Conductors	No.	Feeder Origin	Feeder Destination
F9	480	AC 3-Phase	33.8	PVC	1	2	66360	AL	21.2	1.0000	510	9.54	470.46	1.99	1.99	1-1/2" C-3#2, 1#6 GND. (AL) (23.26% FILL)	F9	'MSB'	AC Disconnect 'DEV'
F10	480	AC 3-Phase	33.8	Steel	1	4	41740	AL	21.2	1.0000	10	0.30	479.70	0.06	2.05	1-1/4" C-3#4, 1#6 GND. (AL) (19.85% FILL)	F10	AC Disconnect 'DEV'	Transformer 'TEV'
F11	208	AC 3-Phase	78	Steel	1	1/0	105600	AL	21.2	1.0000	10	0.27	207.73	0.13	2.18	1-1/2" C-3#1/0, 1#6 GND. (AL) (29.82% FILL)	F11	Transformer 'TEV'	Panel 'EV'
F12	208	AC 3-Phase	30	PVC	1	8	16510	CU	12.9	1.0000	80	3.25	204.75	1.56	3.61	1" C-2#8, 1#10 GND. (CU) (13.67% FILL)	F12	Panel 'EV'	EV Charger No. 1
F13	208	AC 3-Phase	30	PVC	1	8	16510	CU	12.9	1.0000	80	3.25	204.75	1.56	3.61	1" C-2#8, 1#10 GND. (CU) (13.67% FILL)	F13	Panel 'EV'	EV Charger No. 2
F14	208	AC 3-Phase	30	PVC	1	8	16510	CU	12.9	1.0000	100	4.06	203.94	1.95	4.13	1" C-4#8, 1#10 GND. (CU) (24.28% FILL)	F14	Panel 'EV'	EV Charger No. 3

SYSTEM HOST



SYSTEM DEVELOPER

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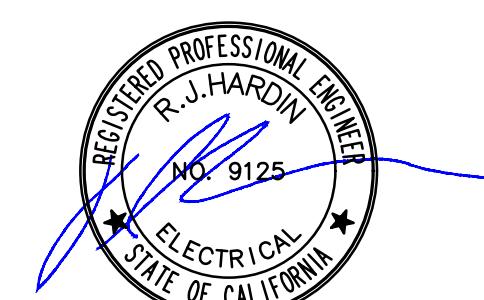
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NO. REVISION DATE

DATE: 03.05.25

PROJECT
BAKERSFIELD CITY SCHOOL DISTRICT
Bessie Owens

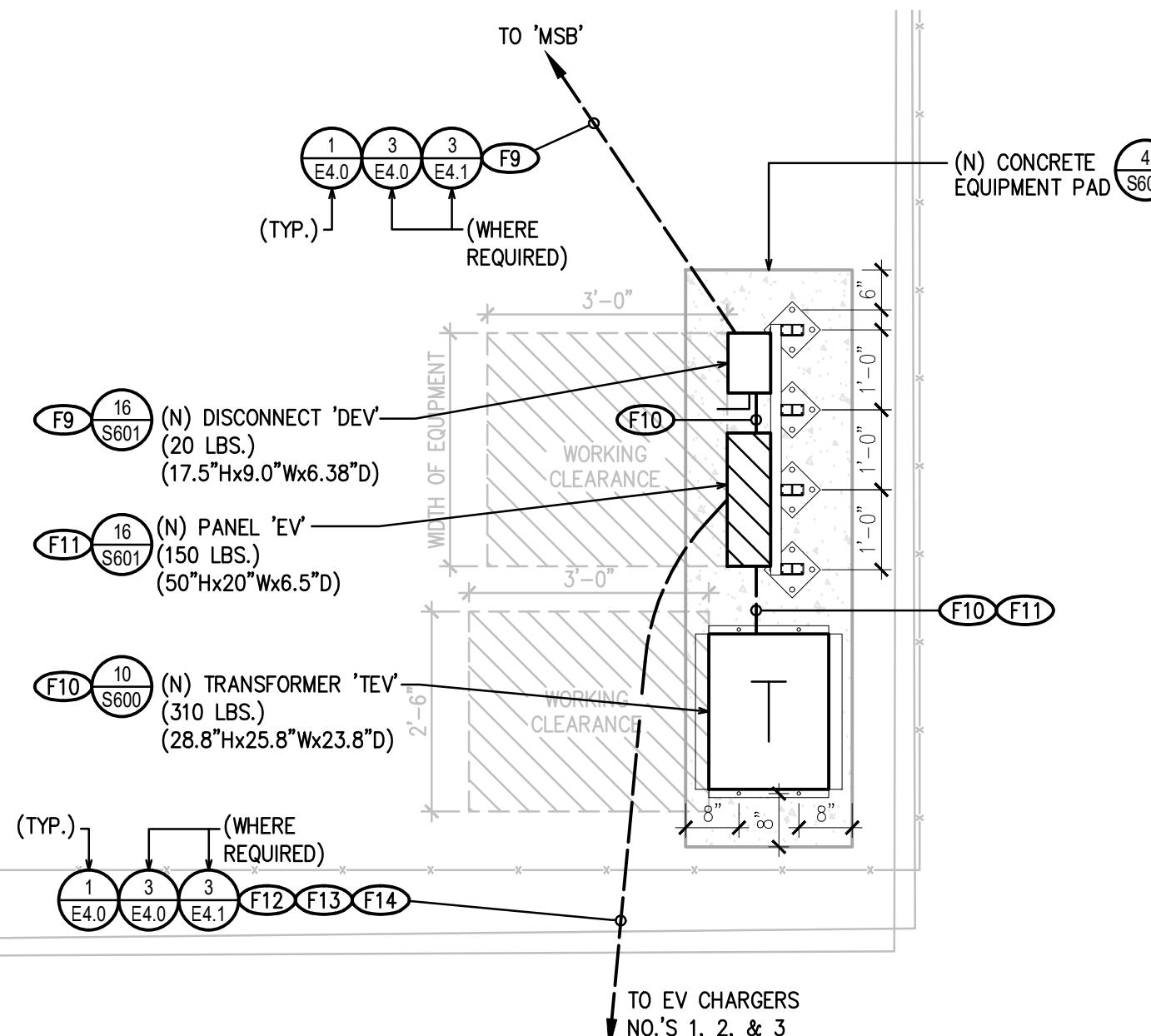
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FPP PROJECT #
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SHEET TITLE

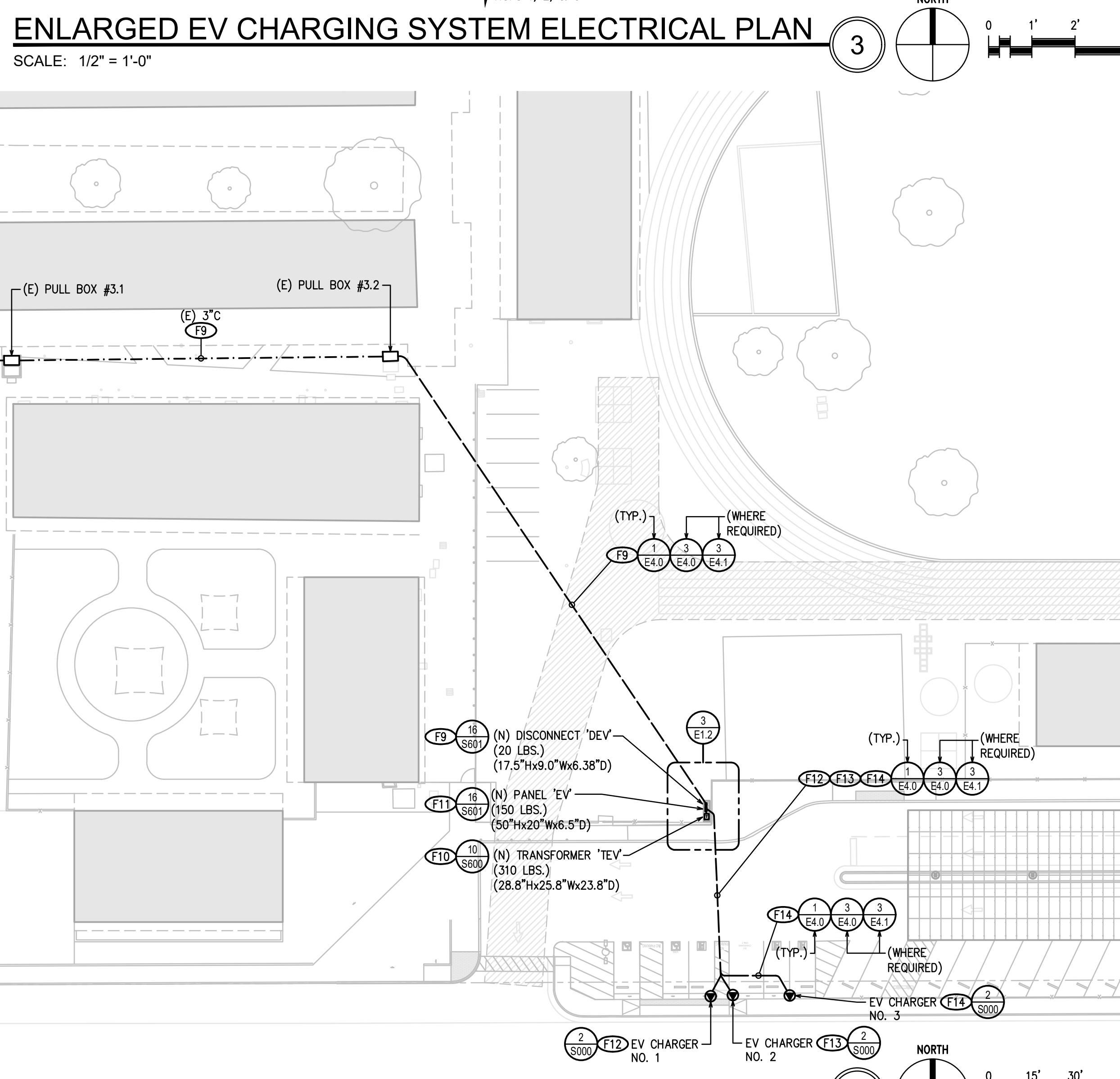
EV CHARGING SYSTEM ELECTRICAL SITE PLAN

SHEET NO.:



ENLARGED EV CHARGING SYSTEM ELECTRICAL PLAN

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



EV CHARGING SYSTEM ELECTRICAL SITE PLAN

SCALE: 1" = 30'-0"

EVCS SINGLE LINE DIAGRAM

SCALE: NONE

E 1.2

DC STRING OCPD CALCULATION
 CEC 310.16
 BACKSIDE GAIN = 10%
 $13.44 \times 1.10 = 14.76\text{A}$
 $14.76 \times 1.56 = 23.06\text{A}$
 25A FUSE ALLOWABLE (PER CEC 690.9(B))

DC STRING WIRE SIZE CALCULATION
 CEC 690.8(B)(1)
 #10 AWG = 40A (90°C) (PER TABLE CEC 310.16)

Isc: $14.78 \times 1.56 = 23.06\text{A}$
 $40.0A > 23.06\text{A}$
 #10 AWG CONDUCTOR IS ALLOWABLE PER CEC 110.14(C)(1)(o)(3)

CEC 690.8(B)(2)
 #10 AWG = 40A (90°C) (PER TABLE CEC 310.16)
 TEMP CONDITIONS: OUTDOOR WIRE RUN – AMBIENT TEMP = 103°F
 (PER TABLE CEC 310.15(B)(1)) = 0.91 DE-RATING

4-6 CURRENT CARRYING CONDUCTORS IN A RACEWAY (SHARED CONDUIT) (PER TABLE CEC 310.15(C)(1)) = 0.80 DE-RATING

#10 AWG = 40A (90°C) (PER TABLE CEC 310.15(C)(1)) = 0.80 DE-RATING

7-9 CURRENT CARRYING CONDUCTORS IN A RACEWAY (SHARED CONDUIT) (PER TABLE CEC 310.15(C)(1)) = 0.70 DE-RATING

MAX/COLD TEMP PV VOLTAGE CALCULATION: Heliene 144HC-525 M10 SL Bifacial Voc: 49.47V
 Temp. Coefficient: -0.25%/C
 Low Temp*: -2.0°C (27.0°F)
 # Modules in Series: 17 or 18

$(49.47\text{V}) \times (0.0025 \text{ V}/\text{C}) \times (27.0^\circ) = 3.34 \text{ VA}$
 $49.47 \text{ Voc} + 3.34 \text{ VA} = 52.81 \text{ Voc (corr)}$
 $(52.81 \text{ V}) \times (17) = 897.8 \text{ VDC max (this is < 1000 VDC)}$
 $(52.81 \text{ V}) \times (18) = 950.6 \text{ VDC max (this is < 1000 VDC)}$

60 KW INVERTER AC Wire & OCPD CALCULATION: INVERTER C, D1, D2, & D3: AC Output Power: 72.2A AC Output Current Max 72.2A x 1.25 = 90.25A 100 AMP OCPD PER 60KW INVERTER OUTPUT

#1 AWG THWN-2 = 115A (90°C) (PER TABLE CEC 310.16) (AL)

TEMP CONDITIONS: OUTDOOR WIRE RUN – AMBIENT TEMP = 103°F (PER TABLE CEC 310.15(B)(1)) = 0.91 DE-RATING

(3) CURRENT CARRYING CONDUCTORS IN A RACEWAY (SHARED CONDUIT) (PER TABLE CEC 310.15(C)(1)) = 1.0 DE-RATING

115A x 0.91 x 1.0 = 104.7A = 104.7A TEMP. ADJUSTED #1 CURRENT = 100A @ 75°C PER CEC 110.14(C)
 #1 AWG CONDUCTOR IS MINIMUM ALLOWABLE (AL)

PV SYSTEM SUMMARY	
MODULE MODEL	Heliene 144HC-525 M10 SL Bifacial
MODULE STC DC RATING	525W
TOTAL MODULE COUNT	832
TOTAL STC DC SYSTEM SIZE	436.80kW
TOTAL NOMINAL AC SYSTEM SIZE	360.00kW
TOTAL CEC-AC SYSTEM SIZE	405.171kW
INVERTER MODELS	(6) CHINT POWER SYSTEMS AMERICA CPS SCA60KTL-DO/US-480 [480V]
MODULE TILT	7°
ARRAY AZIMUTH	180° & 270°
POINT OF SERVICE FAULT CURRENT CONTRIBUTION	425 AMPS
POINT OF SERVICE RATING	65,000 AIC

600V HEAVY DUTY AC VERIFIABLE DISCONNECT SCHEDULE

(WITH CLASS 'RK1' OR 'RK5' CURRENT LIMITING FUSING)

DESIGNATION	DISCONNECT SIZE (VERIFIABLE)	MANUFACTURER'S CAT NO.	AIC RATING
'FD'	600A 3P+SN 600VAC	SQUARE D #H366NR	200,000 AIC

CEC AC KW CALCULATION

Inverter Model Number	PV Module Model Number	PV Module Count	PV Module PTC (Watts)	Inverter Efficiency (%)	CEC AC kW Rating
	144HC-525 M10 SL Bifacial	832	494.4	98.5	405.171
Total	832			Total	405.171

ELEC. EQUIPMENT ANCHORAGE NOTE:

ALL ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16, CHAPTERS 13, 26 AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOBILE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING ELECTRICAL UTILITY SERVICE. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOBILE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

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

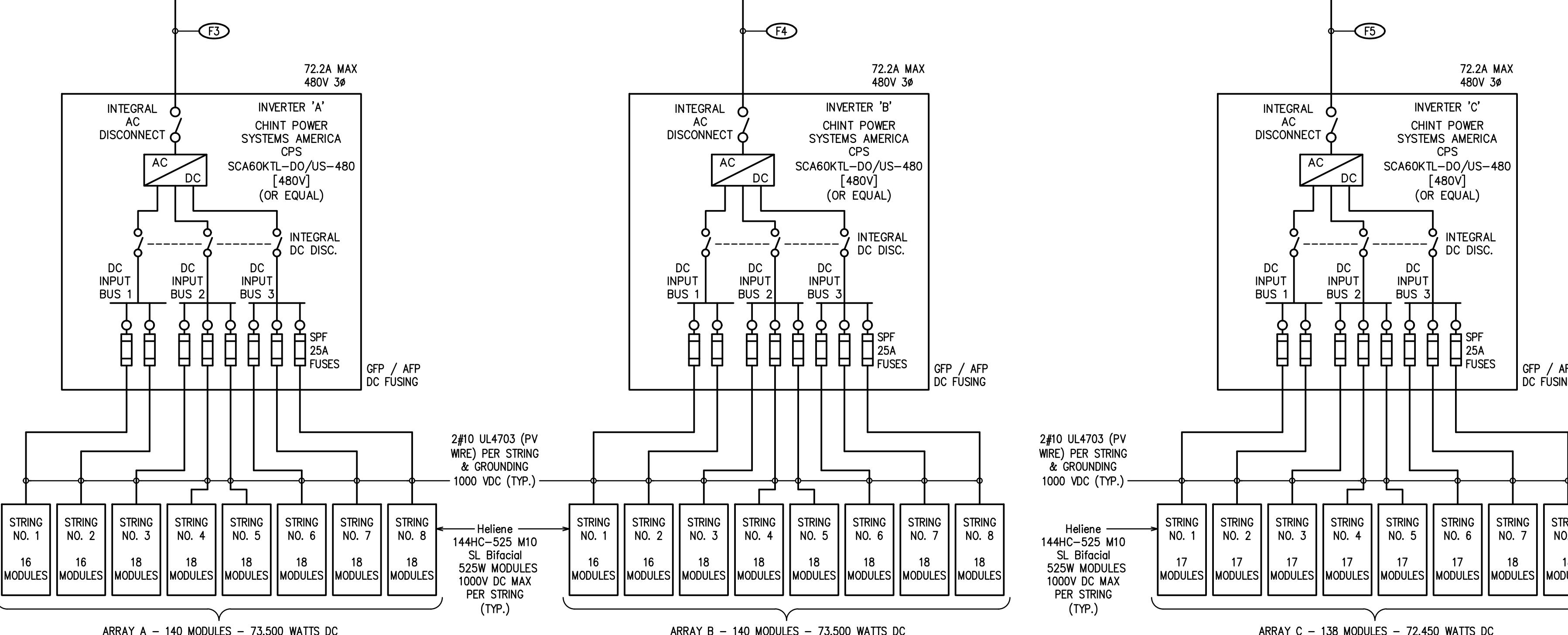
THE ANCHORAGE OF ALL ELECTRICAL COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

ELEC. DISTRIBUTION SYSTEM BRACING NOTE:

ELECTRICAL DISTRIBUTION SYSTEM SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16, SECTION 13.3 AS DEFINED IN ASCE 7-16, SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25, AND 1617A.1.26.

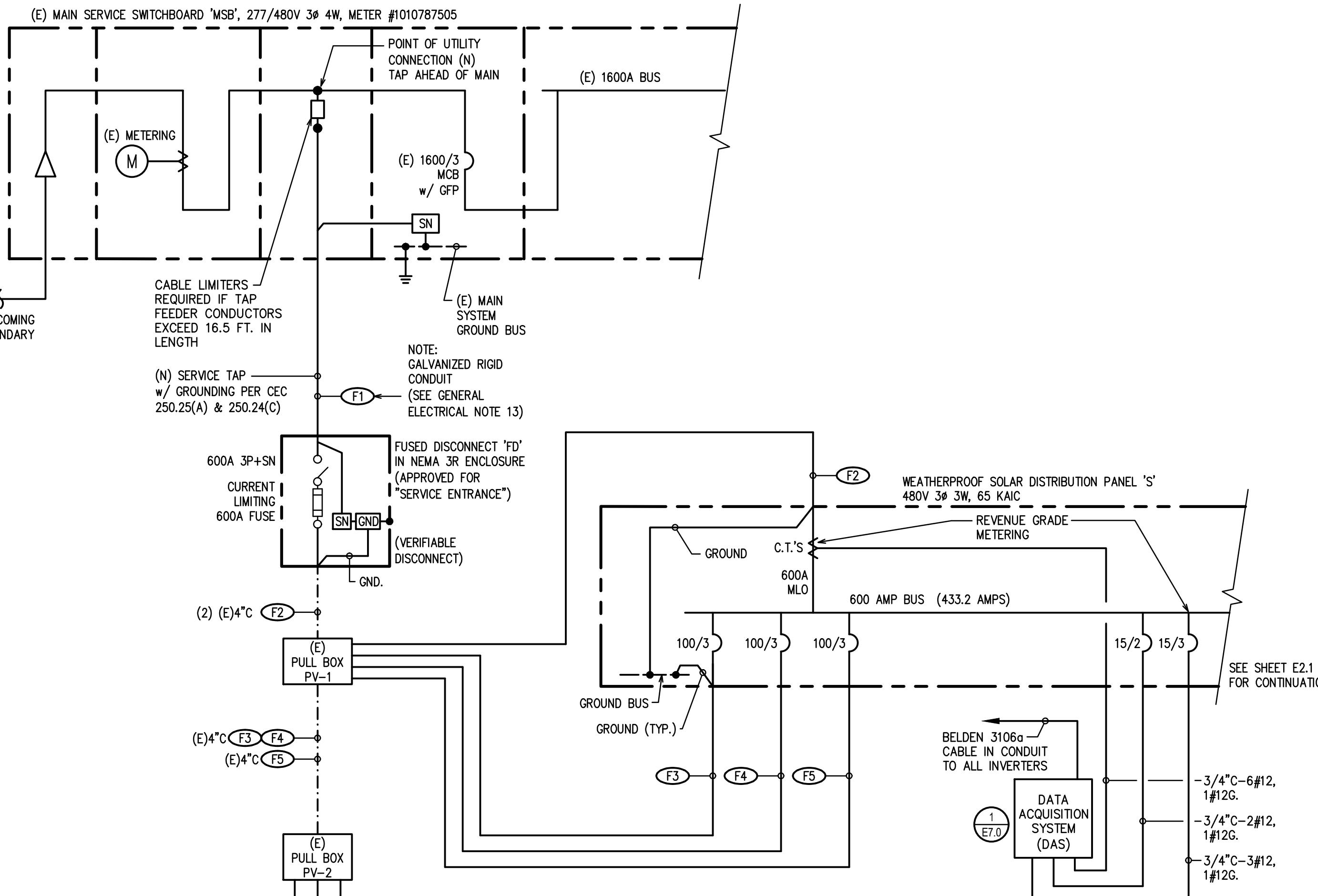
THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGING AND BRACE LOADS.

THE ELECTRICAL DISTRIBUTION SYSTEM IS DETAILED ON THE APPROVED DRAWINGS WITH SPECIFIC NOTES AND DETAILS.



PV SYSTEM SINGLE LINE DIAGRAM 436.80 KW TOTAL

SCALE: NONE



1

E2.0

SYSTEM HOST



SYSTEM DEVELOPER



ELECTRICAL CONSTRUCTORS AND ENGINEERS



STRUCTURAL ENGINEERING



ARCHITECT OF RECORD

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NO. REVISION DATE
 DATE: 03.05.25

PROJECT
 BAKERSFIELD CITY SCHOOL DISTRICT
 Bessie Owens

815 Potomac Ave
 Bakersfield, CA 93307

FPP PROJECT #
 CA-19-0206

SHEET TITLE:
 PV SYSTEM
 ELECTRICAL SINGLE
 LINE DIAGRAM

SHEET NO.:

PV SYSTEM FEEDER SCHEDULE

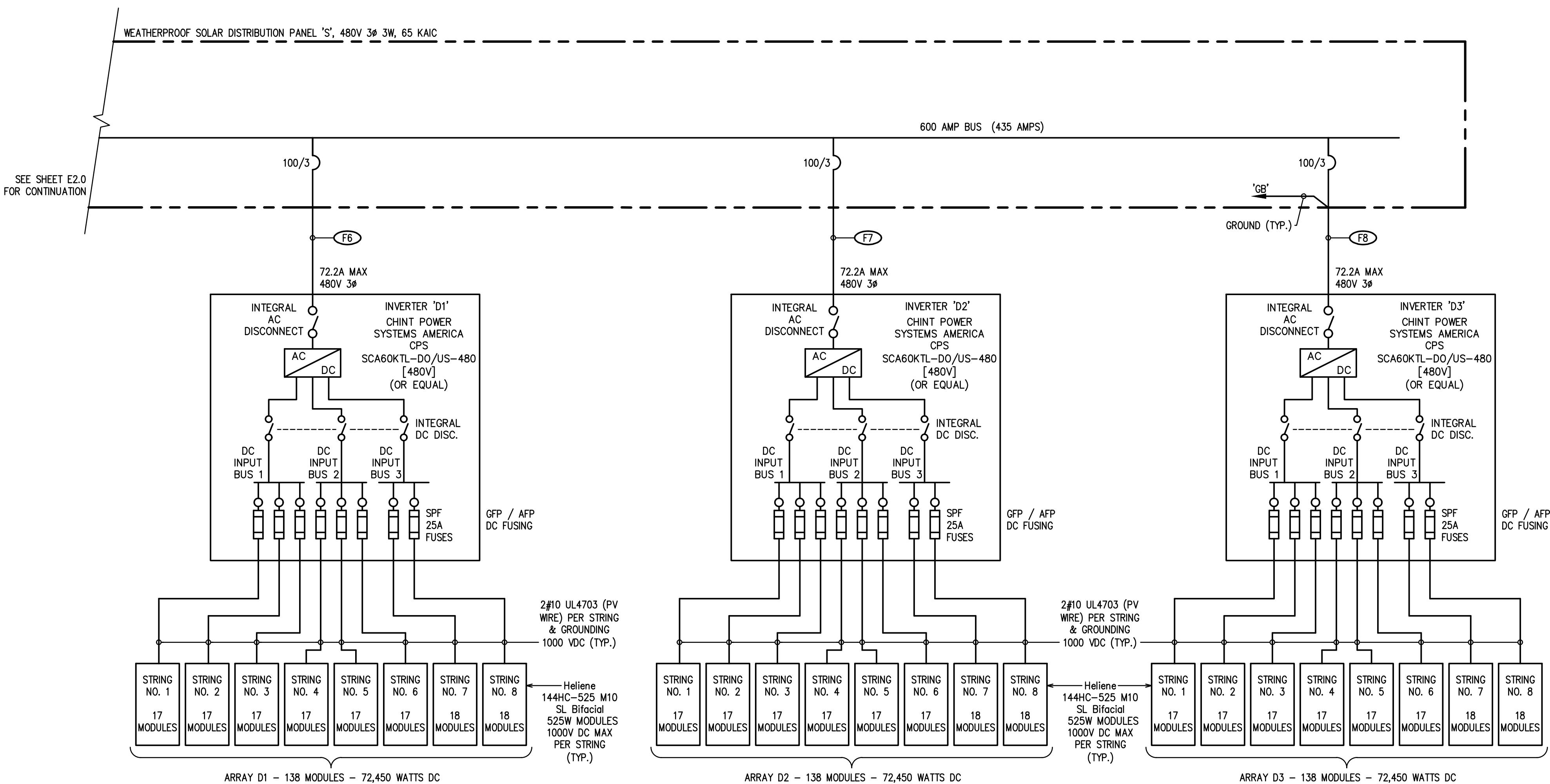
No.	Potential at Origin (Pi) (Volts)	System	Design Current (Amps)	Raceway Type	Sets of Cond.	Conductor Trade Size	Conductor Cross-Sectional Area (CM)	Conductor Material	DC Conductor Material Constant (K)	Q	Distance (ft)	Voltage Drop (VD) (Volts)	Percent Voltage Drop (%VD)	Total Voltage Drop (Volts)	Total Voltage Drop (%Vd AC + DC)	Conduit & Conductors	No.	Feeder Origin	Feeder Destination	
	No.																			
F1	480	AC 3-Phase	433.2	Steel	2	350 kCMIL	700000	CU	12.9	1.0627	30	0.44	479.56	0.09	0.09	N/A	TWO 3/0-#350kCMIL, #2/0 NEUT. (CU) (2.8% FLL)	F1	MSB	AC Disconnect 'F'
F2	480	AC 3-Phase	433.2	PVC	2	500 kCMIL	1000000	AL	21.2	1.0142	80	1.29	478.71	0.27	0.36	N/A	TWO: #4/0-#500kCMIL, #2/0 GND (AL) (20.8% FLL)	F2	AC Disconnect 'F'	Panel 'S'
F3	480	AC 3-Phase	72.2	PVC	1	1/0	105600	AL	21.2	1.0000	245	6.15	473.85	1.28	1.64	2.15	2/0-#1/0, #1#4 GND (AL) (30.35% FLL) (4"=1.23% FLL)	F3	Panel 'S'	Inverter 'A'
F4	480	AC 3-Phase	72.2	PVC	1	2/0	133100	AL	21.2	1.0063	445	8.92	471.08	1.86	2.22	2.72	2/0-#2/0, #1#4 GND (AL) (26.06% FLL) (4"=1.23% FLL)	F4	Panel 'S'	Inverter 'B'
F5	480	AC 3-Phase	72.2	PVC	1	1	83690	AL	21.2	1.0000	185	5.86	474.14	1.22	1.58	1.92	1-1/2-#1/0, #1#6 GND (AL) (30.35% FLL) (4"=4.61% FLL)	F5	Panel 'S'	Inverter 'C'
F6	480	AC 3-Phase	72.2	PVC	1	4/0	211600	AL	21.2	1.0000	570	7.14	472.86	1.49	1.85	2.19	2/0-#4/0, #1#2 GND (AL) (37.8% FLL)	F6	Panel 'S'	Inverter 'D'
F7	480	AC 3-Phase	72.2	PVC	1	4/0	211600	AL	21.2	1.0000	570	7.14	472.86	1.49	1.85	2.60	2/0-#4/0, #1#2 GND (AL) (37.8% FLL)	F7	Panel 'S'	Inverter 'D2'
F8	480	AC 3-Phase	72.2	PVC	1	4/0	211600	AL	21.2	1.0000	610	7.64	472.36	1.59	1.95	2.99	2/0-#4/0, #1#2 GND (AL) (37.8% FLL)	F8	Panel 'S'	Inverter 'D3'
A-8	751.5	DC	13.84	n/a-DC	1	10	10380	CU	12.9	n/a	110	3.78	747.72	0.50	N/A	N/A	#10 (CU)	A-8	Inverter 'A'	Worst Case DC string
B-8	751.5	DC	13.84	n/a-DC	1	10	10380	CU	12.9	n/a	110	3.78	747.72	0.50	N/A	N/A	#10 (CU)	B-8	Inverter 'B'	Worst Case DC string
C-6	709.75	DC	13.84	n/a-DC	1	10	10380	CU	12.9	n/a	70	2.41	707.34	0.34	N/A	N/A	#10 (CU)	C-6	Inverter 'C'	Worst Case DC string
D1-6	709.75	DC	13.84	n/a-DC	1	10	10380	CU	12.9	n/a	70	2.41	707.34	0.34	N/A	N/A	#10 (CU)	D1-6	Inverter 'D1'	Worst Case DC string
D2-6	709.75	DC	13.84	n/a-DC	1	10	10380	CU	12.9	n/a	155	5.33	704.42	0.75	N/A	N/A	#10 (CU)	D2-6	Inverter 'D2'	Worst Case DC string
D3-6	709.75	DC	13.84	n/a-DC	1	10	10380	CU	12.9	n/a	215	7.40	702.35	1.04	N/A	N/A	#10 (CU)	D3-6	Inverter 'D3'	Worst Case DC string

CANOPY DC STRING HOME RUNS

MAXIMUM NUMBER OF CU #10 PV WIRES (PV WIRE + GROUND)

CONDUIT TRADE SIZE	CONDUIT LENGTH 24" OR LESS (60% FILL)	CONDUIT LENGTH OVER 24" (40% FILL)	
	LFMC	LFMC	EMT
3/4"	5	3	3
1"	9	6	6
1-1/4"	16	9	9
1-1/2"	22	9	9
2"	36	9	9

TABLE ASSUMING CU #10 PV WIRE WITH .26" O.D.



PV SYSTEM SINGLE LINE DIAGRAM 436.80 KW TOTAL

SCALE: NONE



SYSTEM HOST

SYSTEM DEVELOPMENT



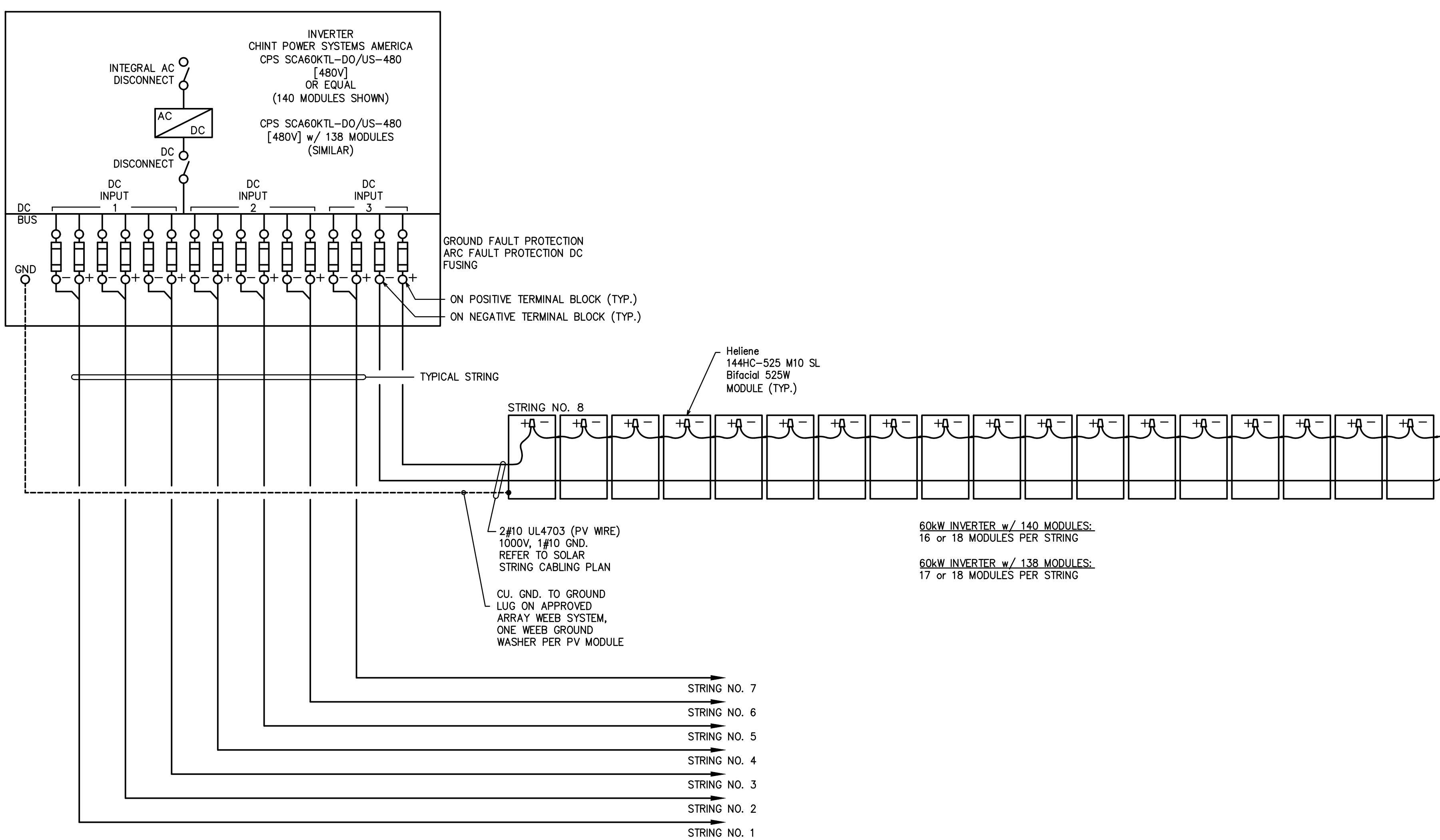
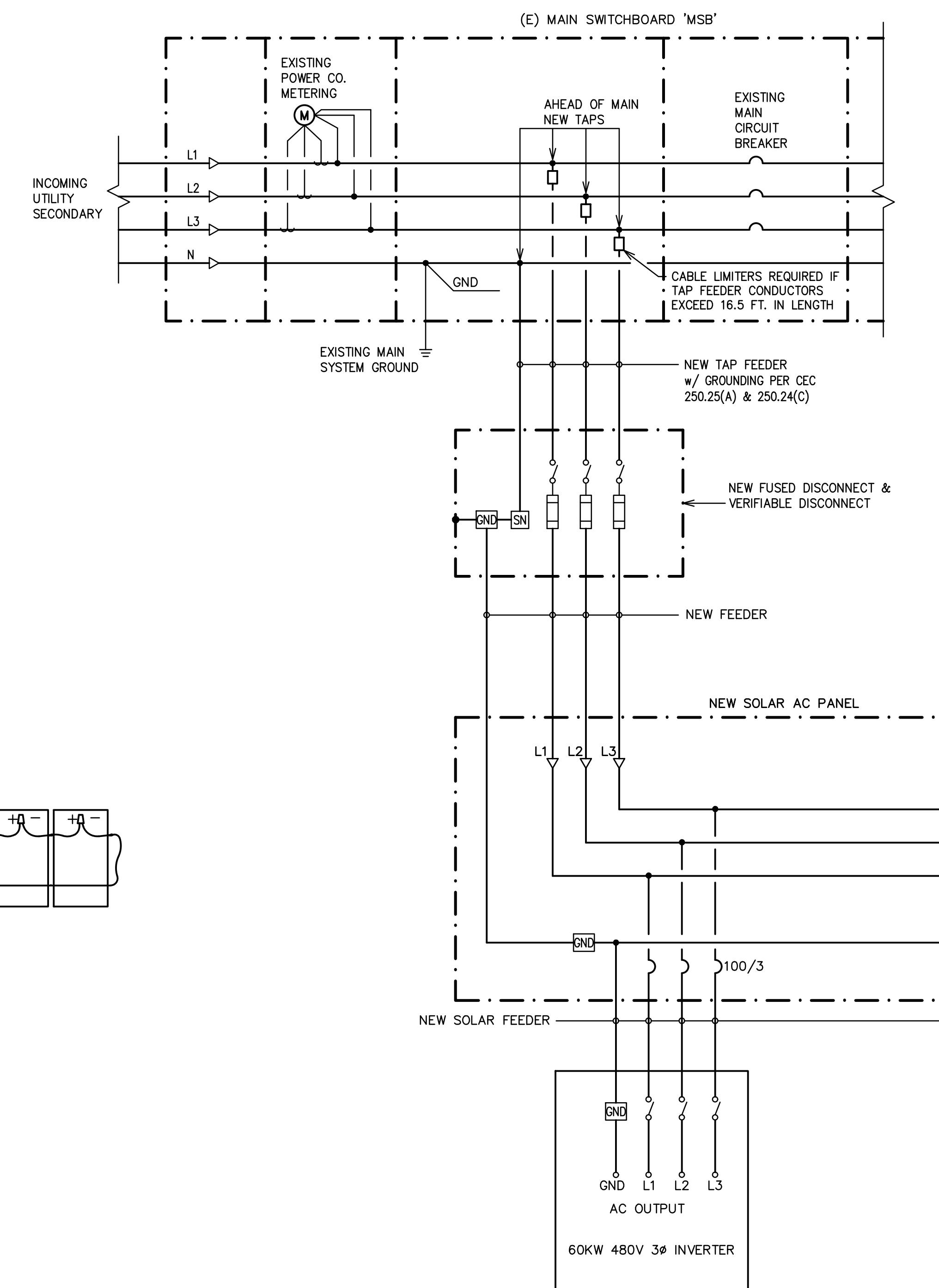
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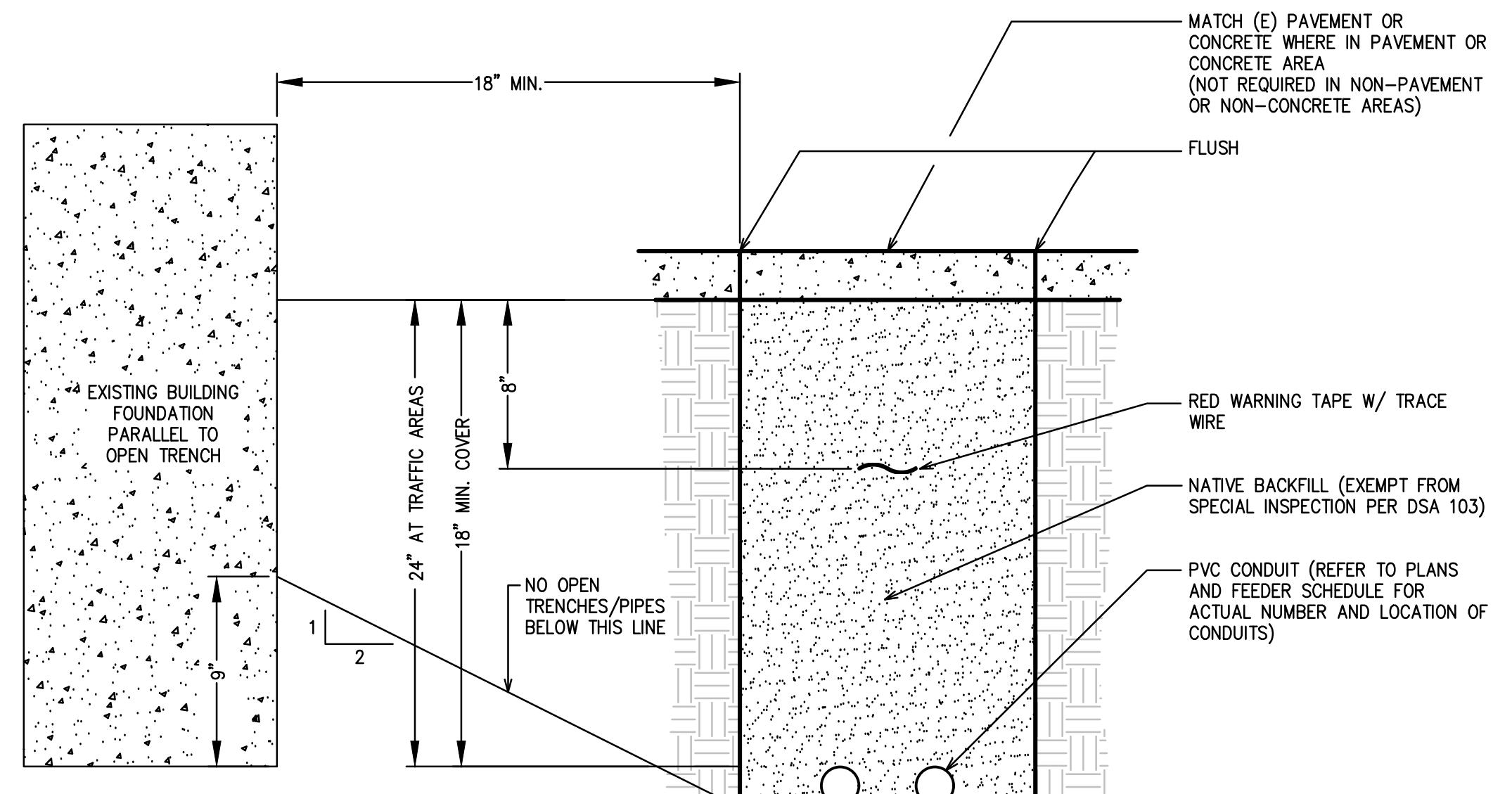
PV SYSTEM TYPICAL DC LINE DIAGRAM

SCALE: NONE

PV SYSTEM TYPICAL THREE LINE DIAGRAM

SCALE: NONE

F3 0

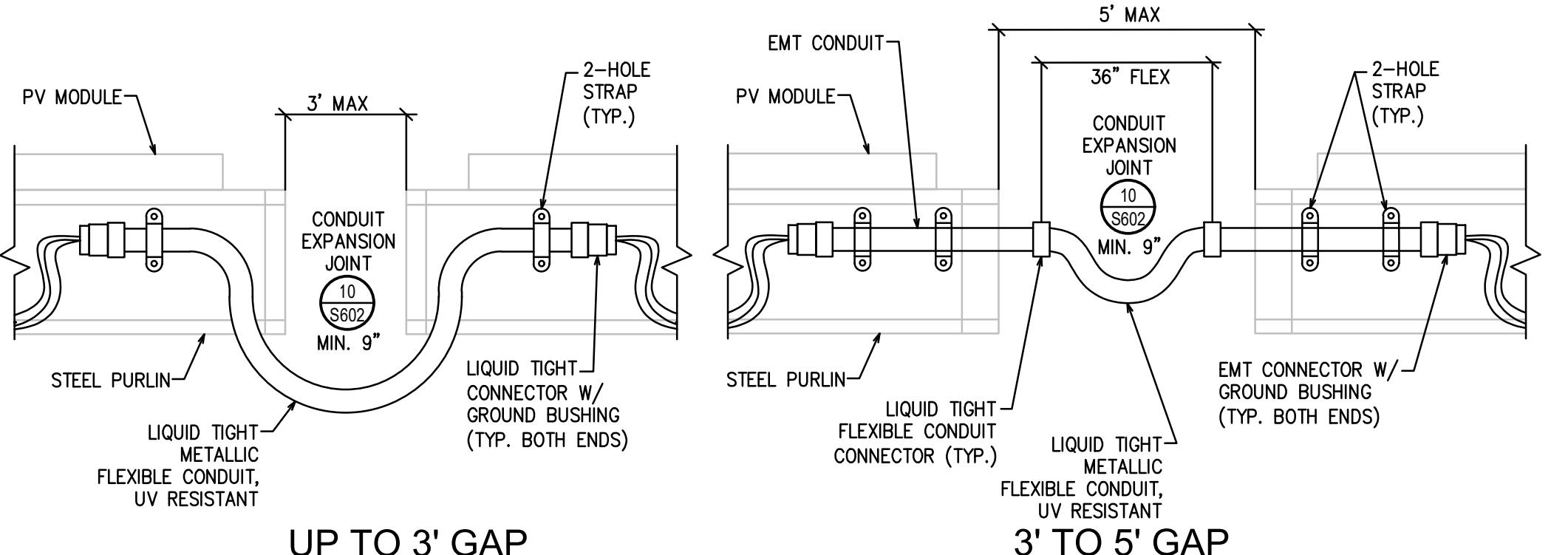


TRENCH THROUGH PAVEMENT TRAFFIC DETAIL

NO SCALE

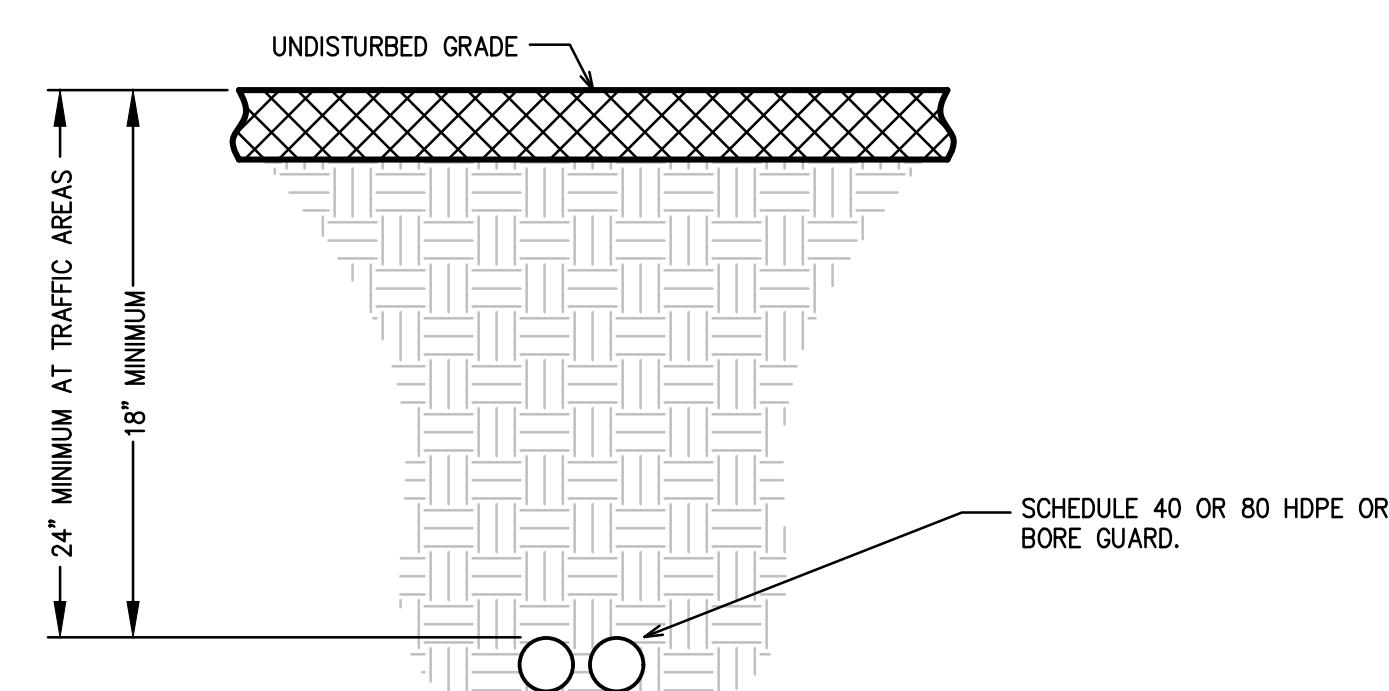
NOTES:

1. TRENCHING ONLY WHERE REQUIRED
2. SOIL BACKFILL EXEMPT FROM SPECIAL INSPECTION PER DSA 103



WIRING BRIDGE DETAIL

NO SCALE



HORIZONTAL BORE DETAIL

NO SCALE

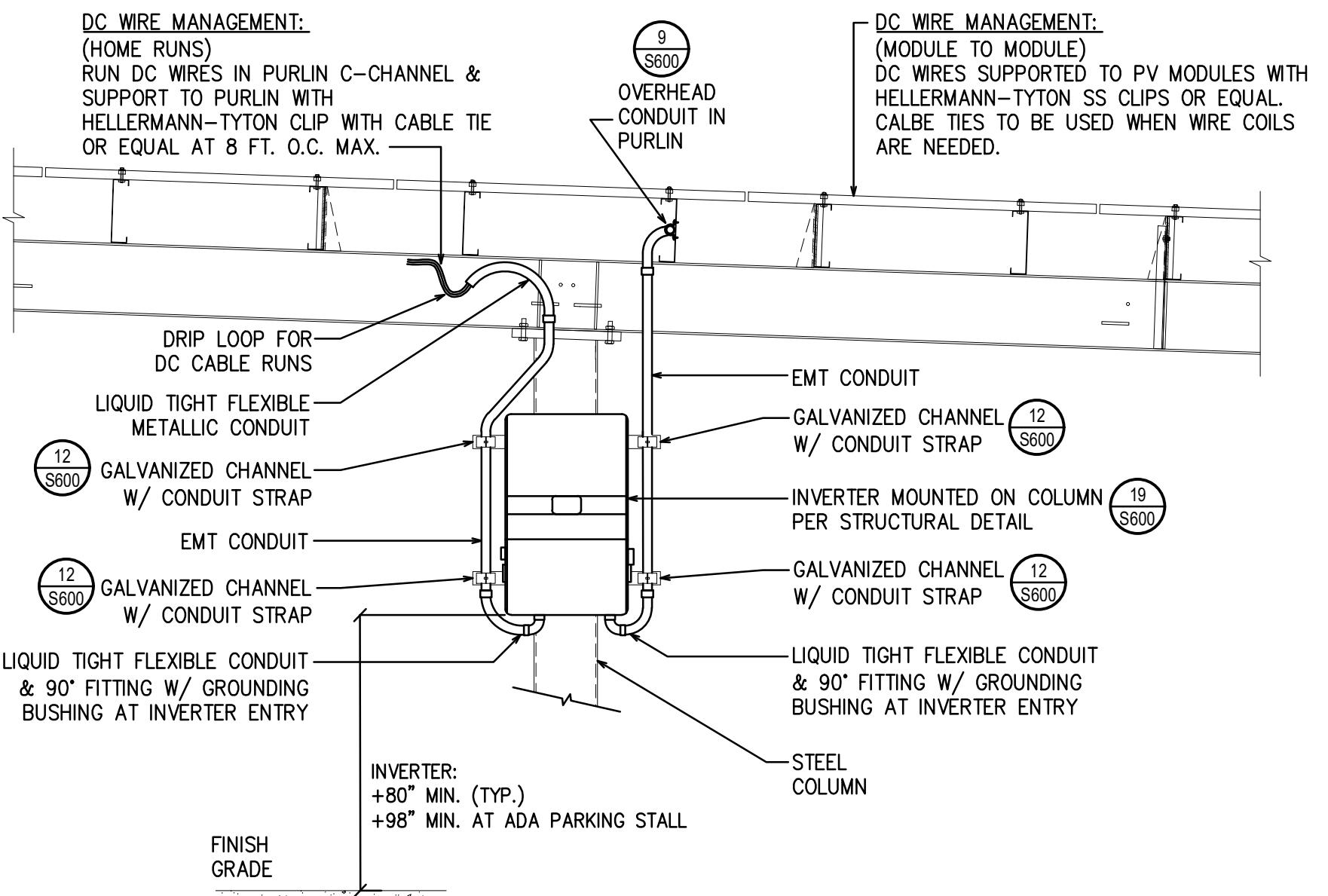
NOTE: BORING TYPICAL INSTALLATION METHOD

TYPICAL PV CANOPY UNDERGROUND CONDUIT RISER DETAIL

NO SCALE

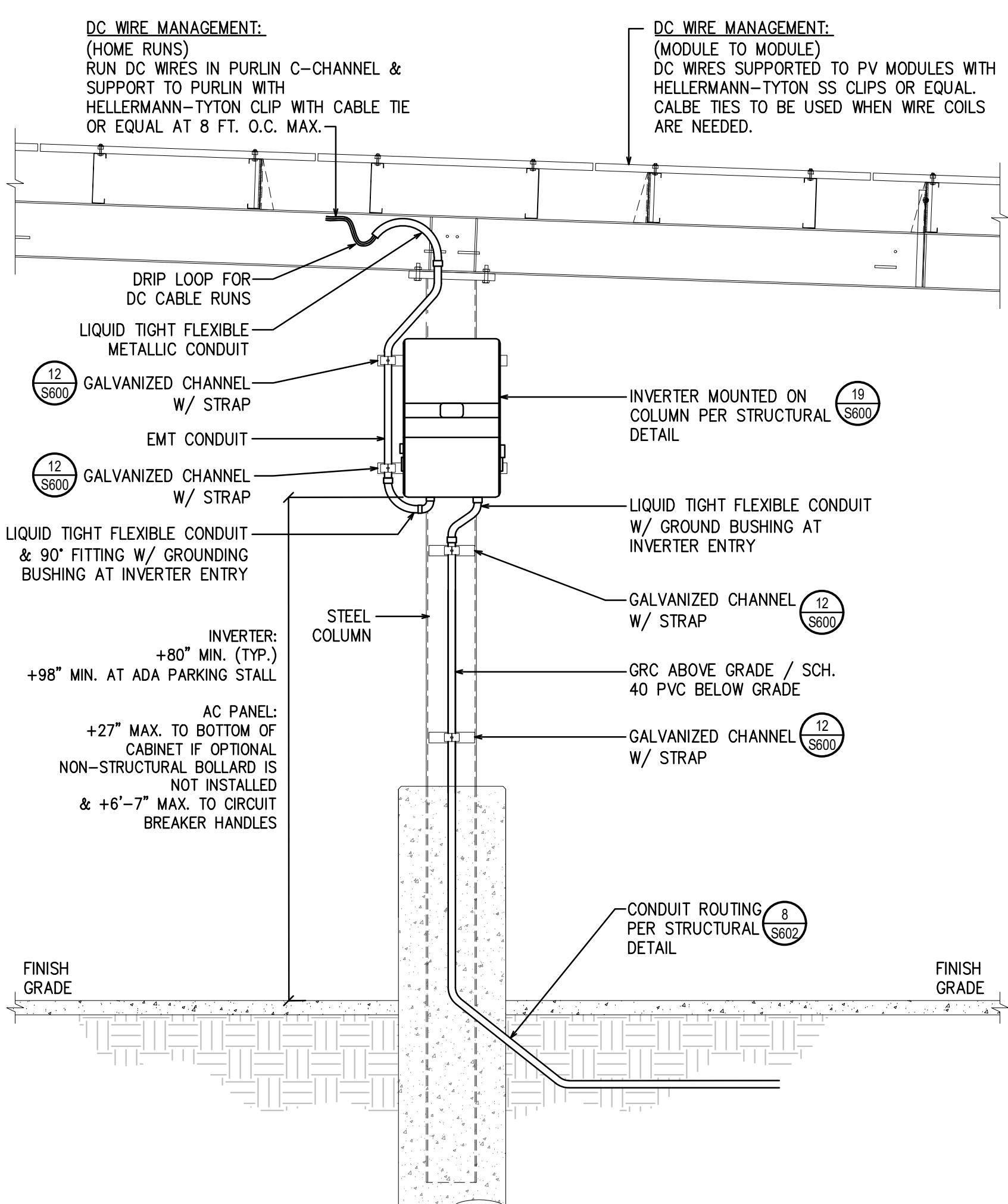
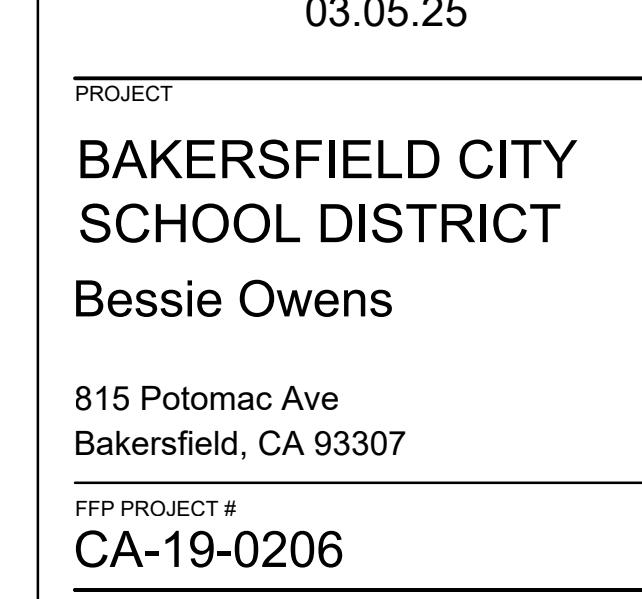
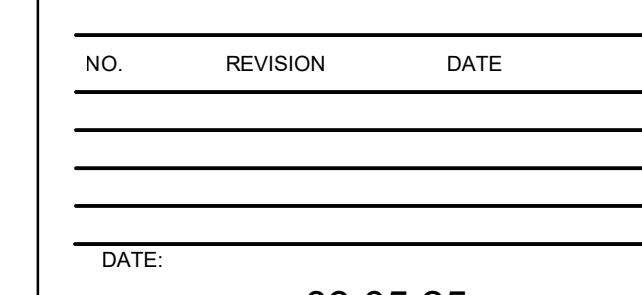
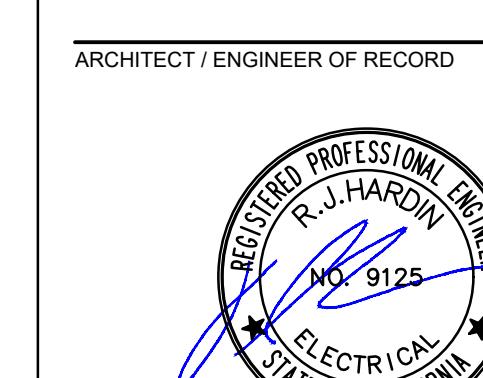
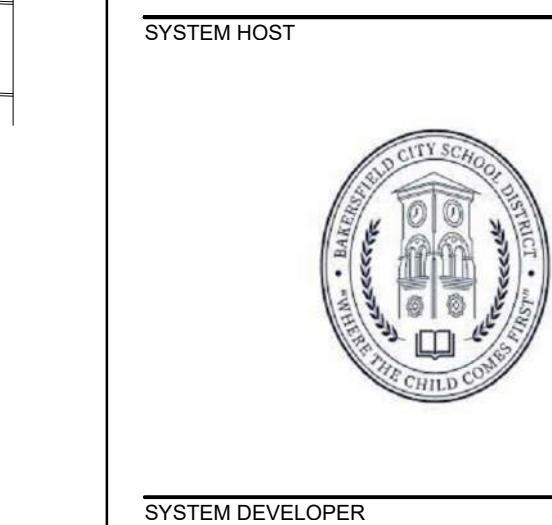
NOTE: ONE REQUIRED PER ARRAY STRUCTURE

1



TYPICAL PV CANOPY OVERHEAD CONDUIT RISER DETAIL

NO SCALE



SECTION VIEW

PV CANOPY GROUNDING DETAIL

NO SCALE

NOTE: ONE REQUIRED PER ARRAY STRUCTURE

4

5

SYSTEM HOST



SYSTEM DEVELOPER

FOREFRONT
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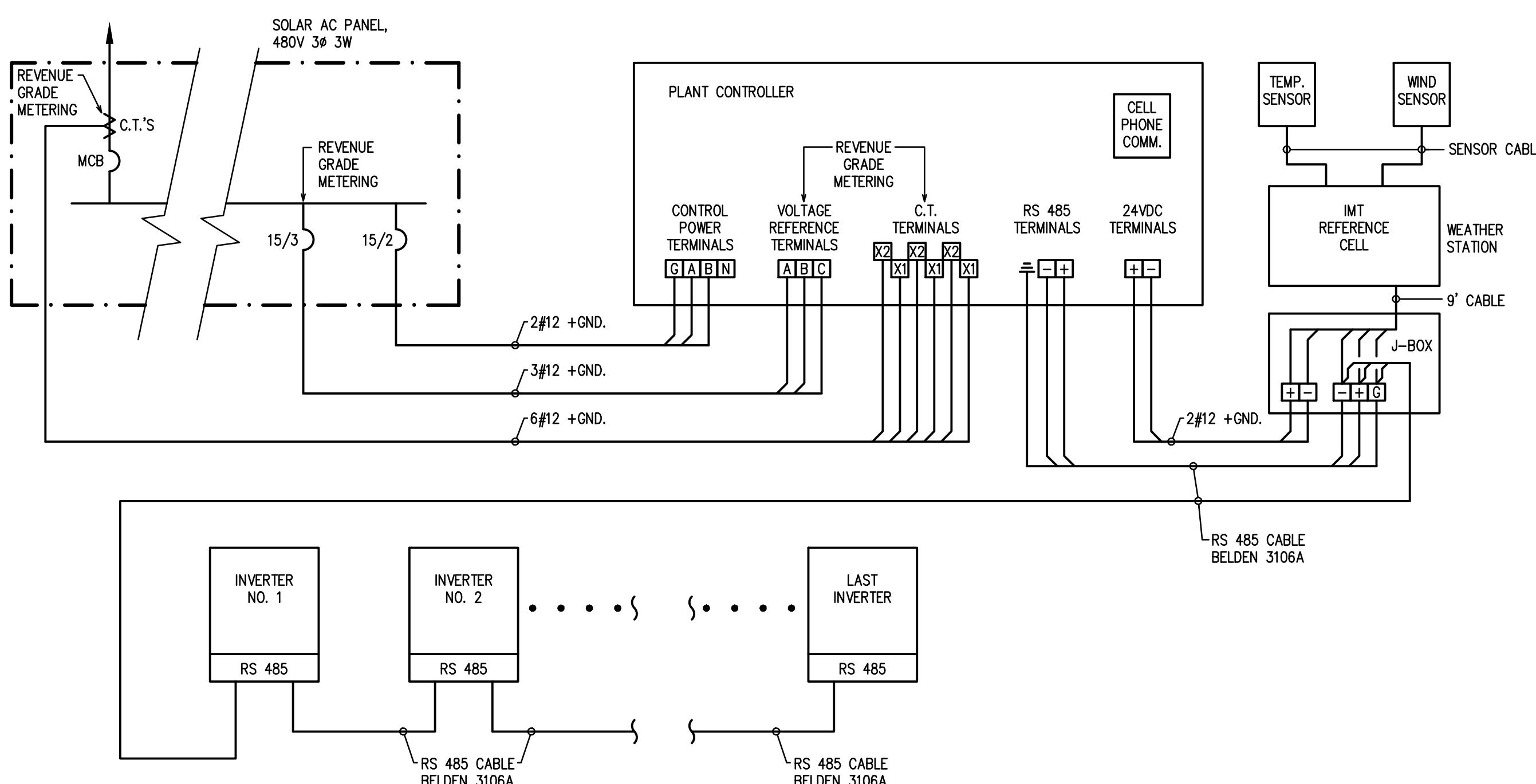
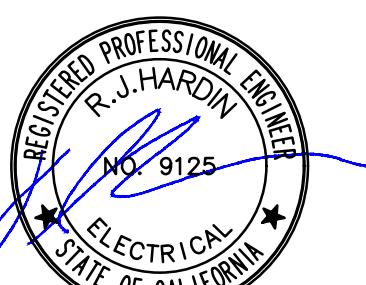
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ARCHITECT OF RECORD

M M P V d e s i g n

Mariana Moncada, Architect
718 West Arbor Drive
San Diego, CA 92103
619.632.2883

ARCHITECT / ENGINEER OF RECORD

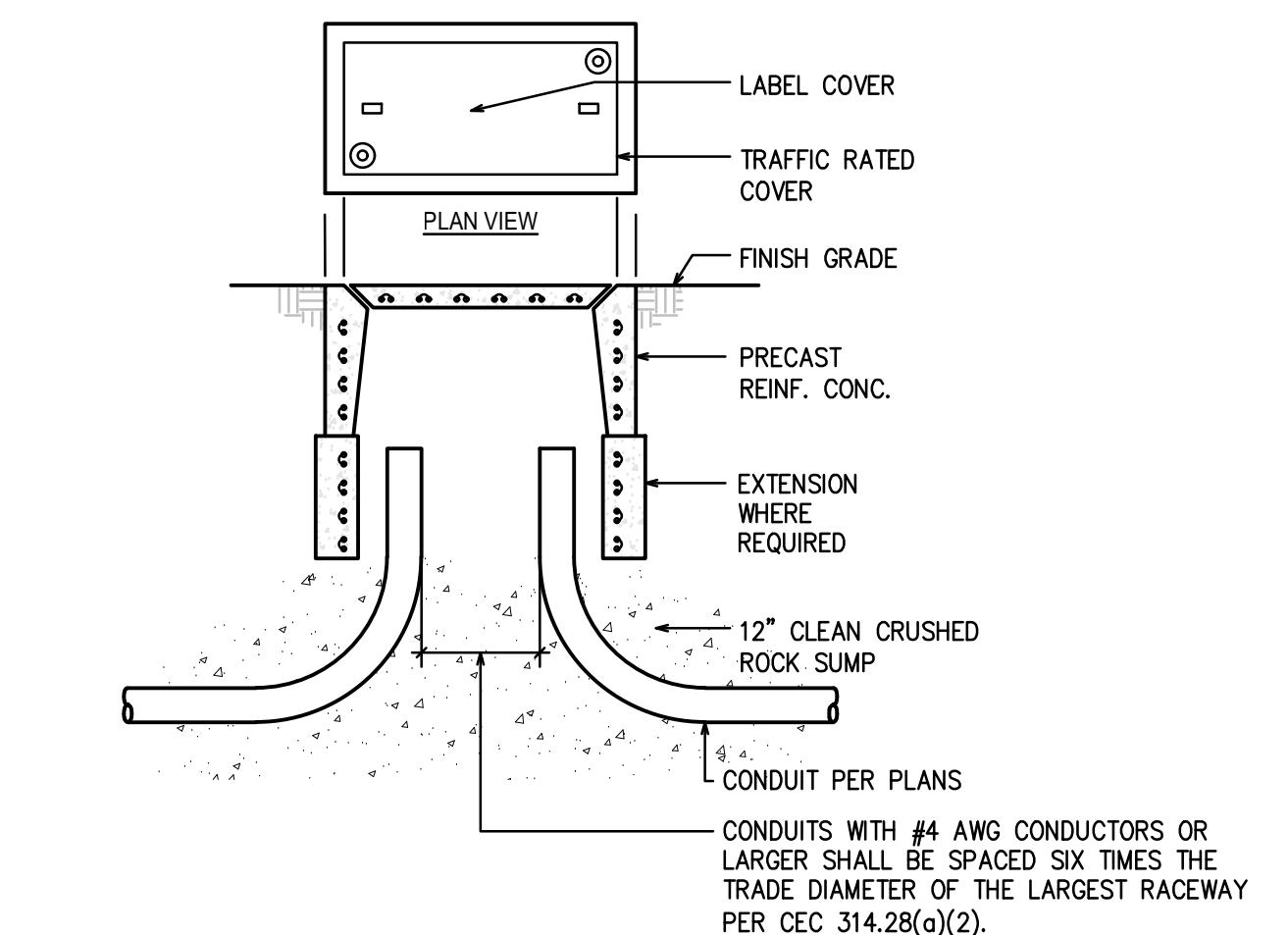


TYPICAL DATA ACQUISITION SYSTEM WIRING DIAGRAM

SCALE: NONE

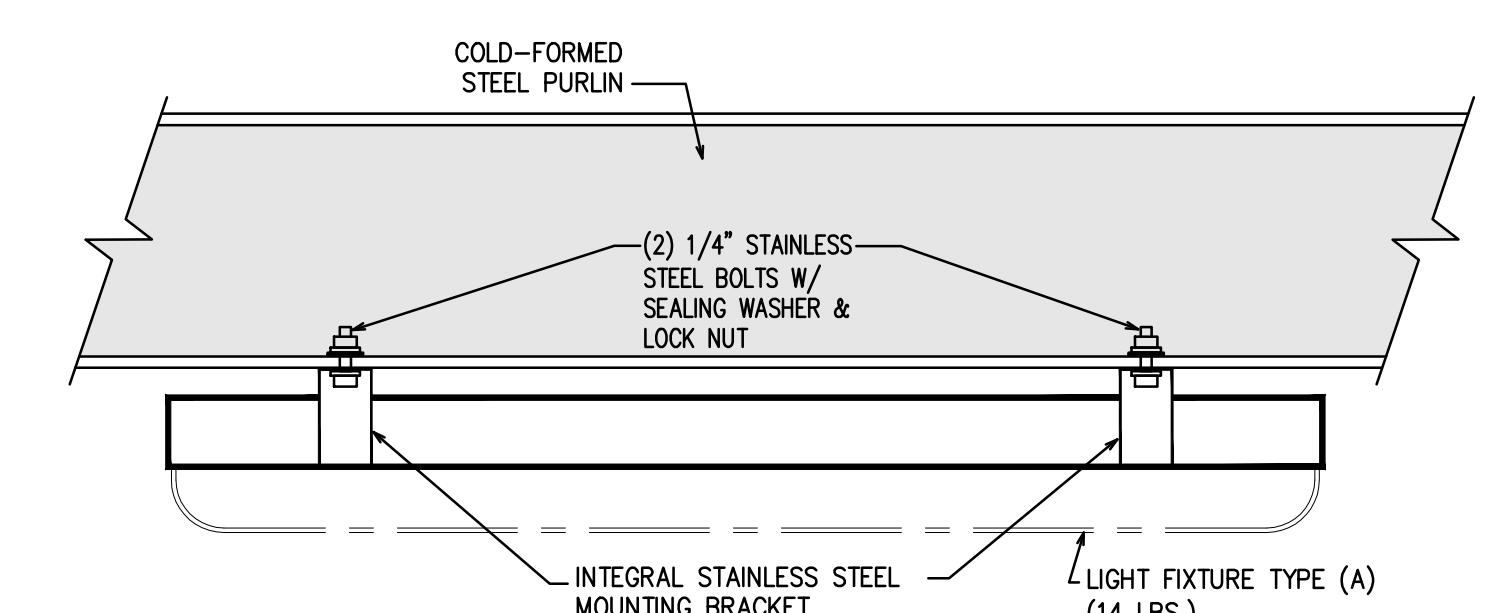
TYPICAL PULL BOX DETAIL

SCALE: NONE



4

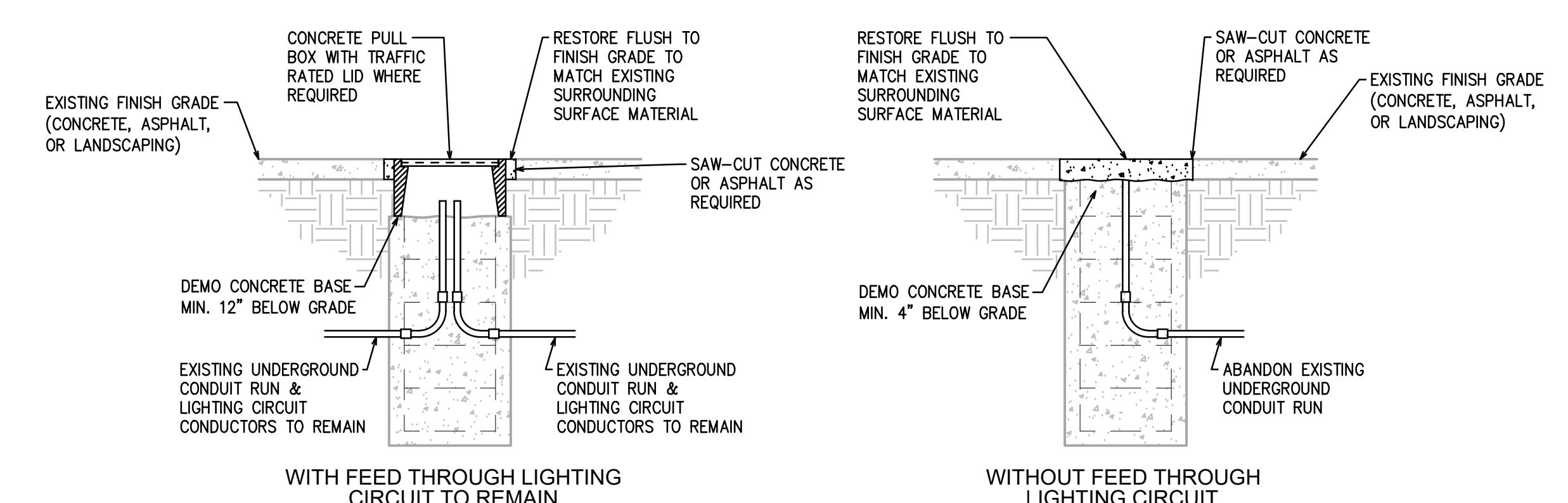
3



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

LIGHT FIXTURE MOUNTING DETAIL

SCALE: NONE



LIGHT POLE CONCRETE BASE DEMOLITION DETAIL

SCALE: NONE

SHEET NO.:

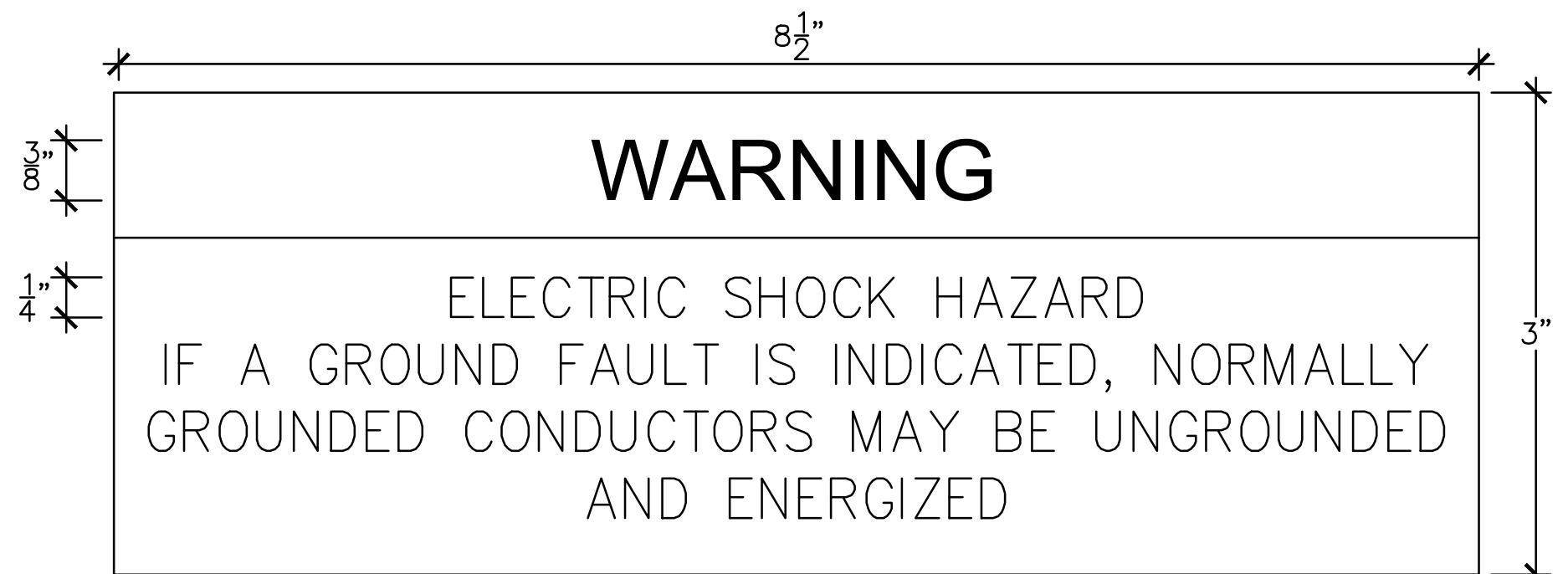
E4.1

NO. REVISION DATE
DATE: 03.05.25
PROJECT
BAKERSFIELD CITY SCHOOL DISTRICT
Bessie Owens

815 Potomac Ave
Bakersfield, CA 93307

FFP PROJECT # CA-19-0206
SHEET TITLE

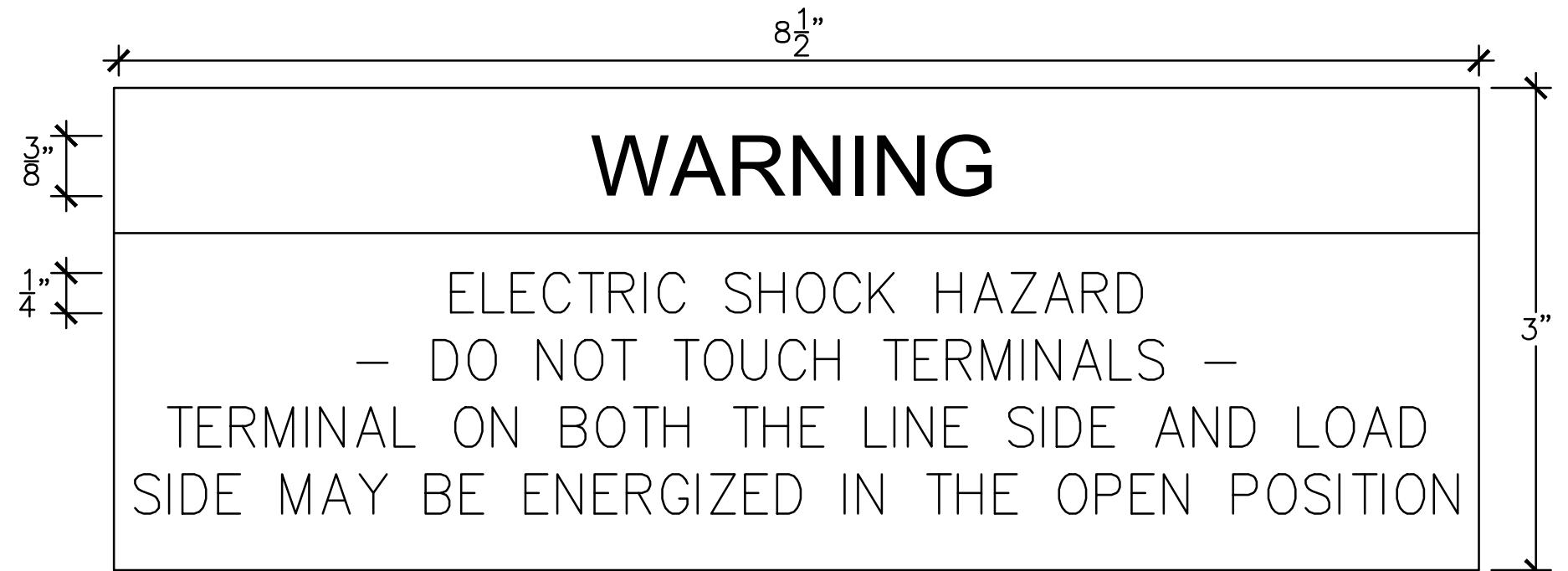
ELECTRICAL DETAILS



LABEL - 1

SCALE: NONE

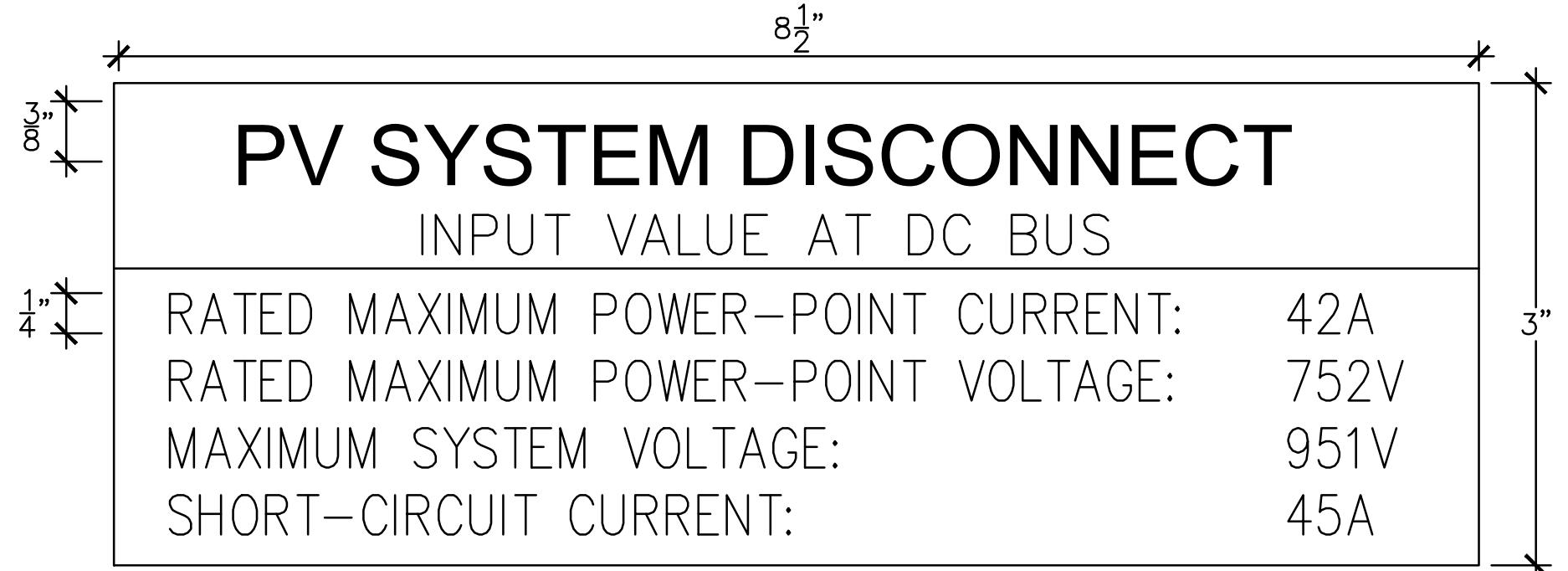
LOCATION:	INVERTERS
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



LABEL - 2

SCALE: NONE

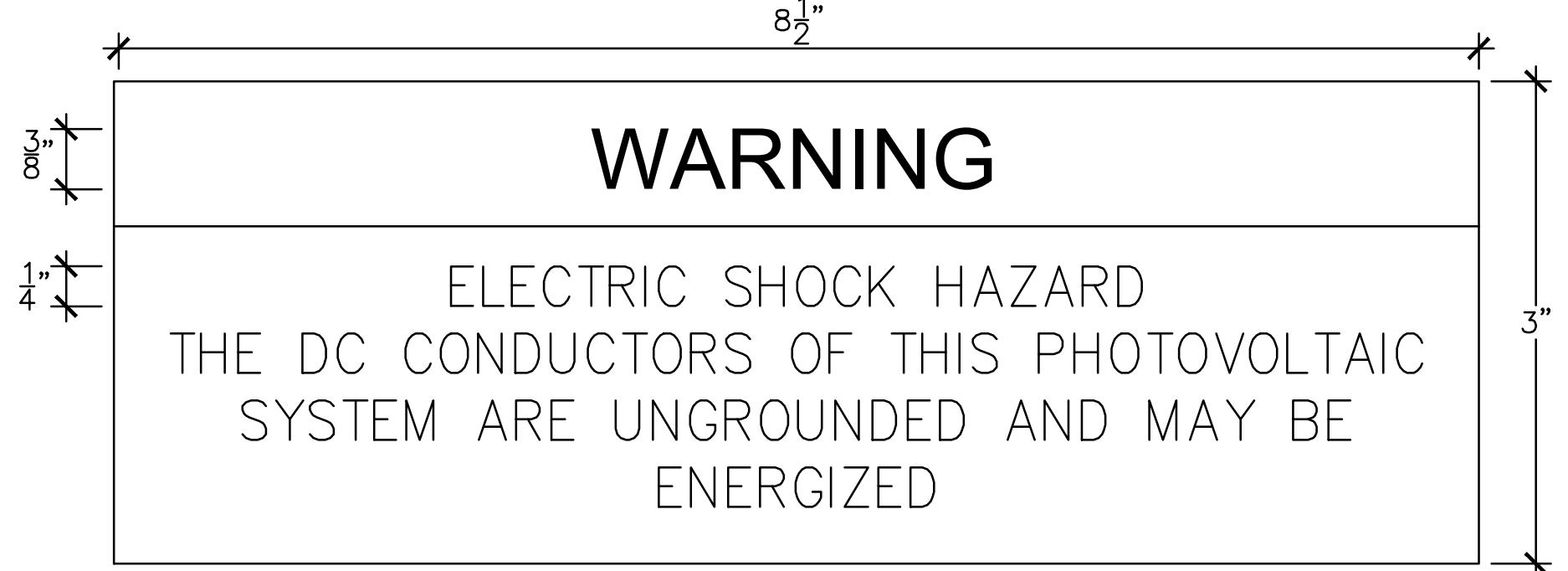
LOCATION:	AC DISCONNECTS & PANELBOARDS
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



LABEL - 3

SCALE: NONE

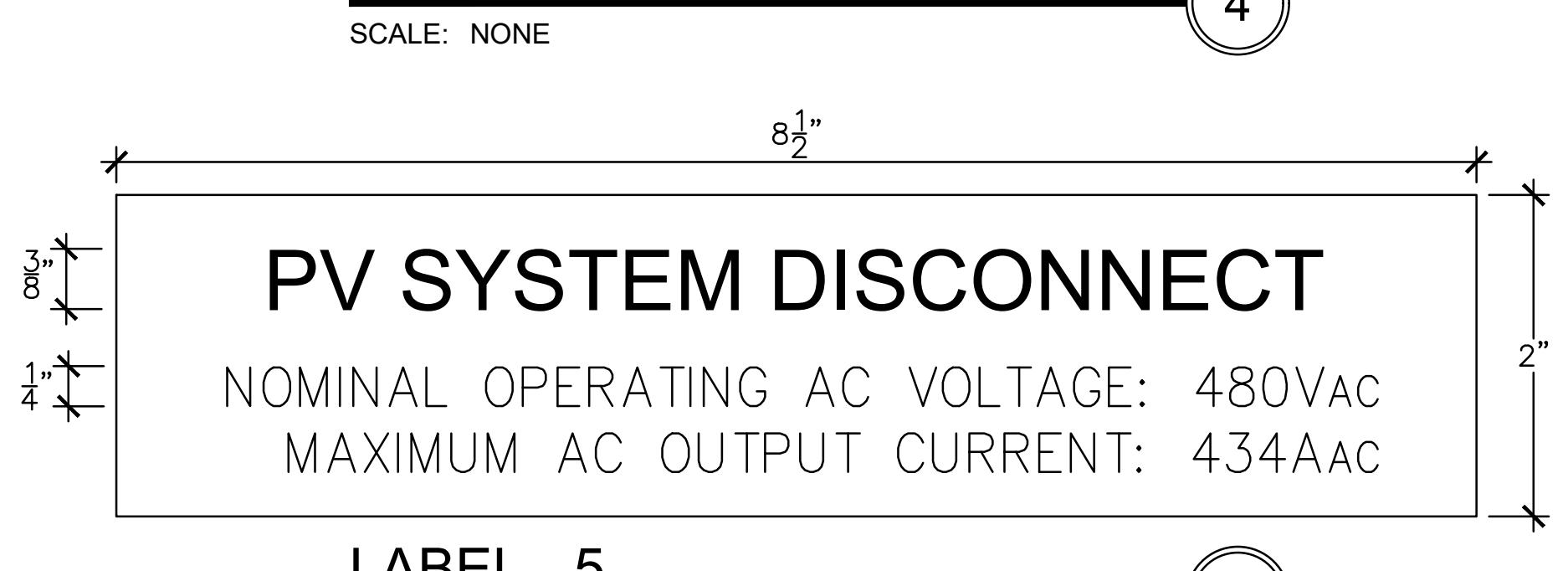
LOCATION:	60kW INVERTERS
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



LABEL - 4

SCALE: NONE

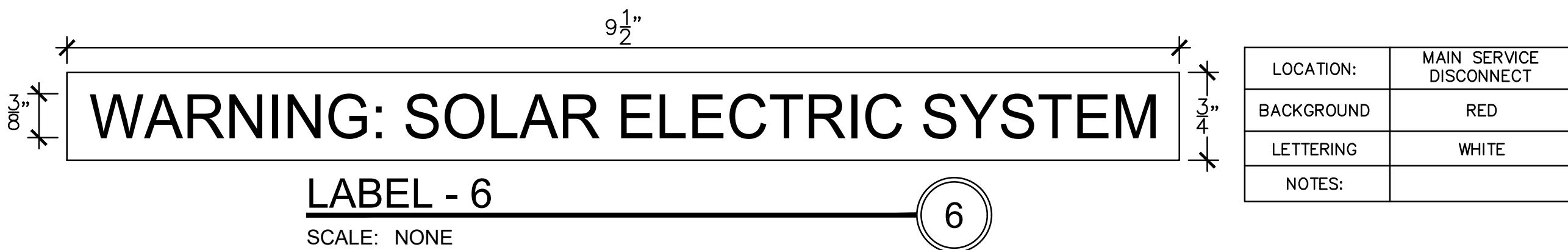
LOCATION:	INVERTERS
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



LABEL - 5

SCALE: NONE

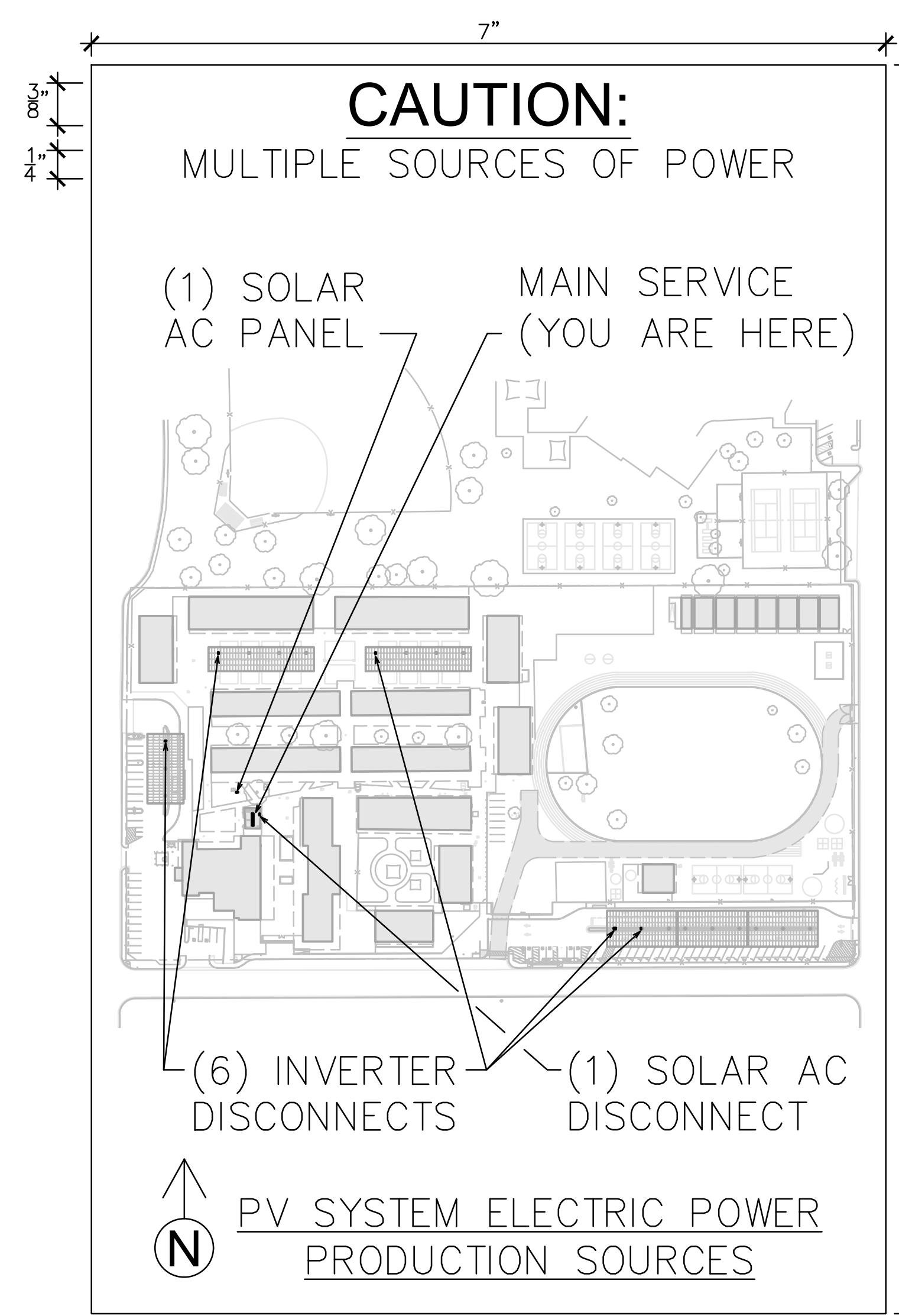
LOCATION:	AC DISCONNECT
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



LABEL - 6

SCALE: NONE

LOCATION:	MAIN SERVICE DISCONNECT
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



LABEL - 7

SCALE: NONE

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



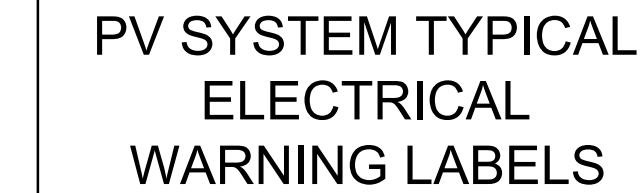
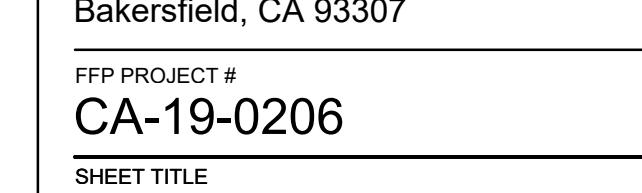
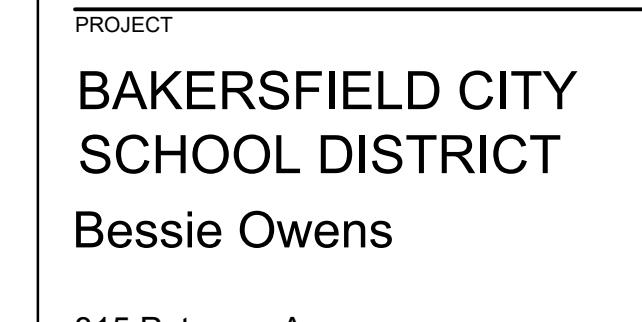
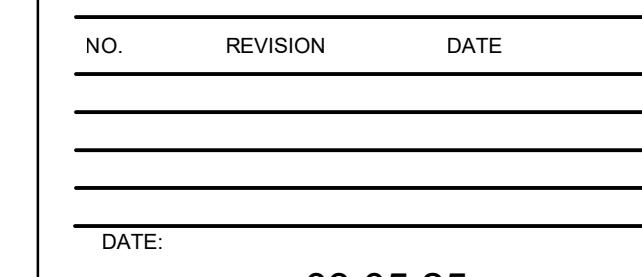
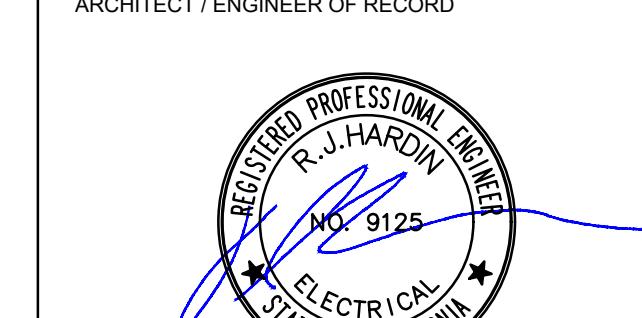
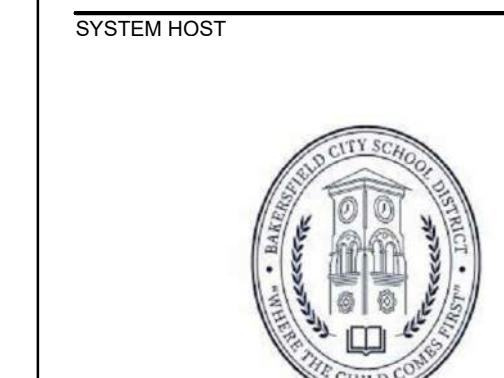
ARC FLASH WITH EXAMPLE TEXT AND DIMENSIONS

LABEL - 8

SCALE: NONE

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

E5.0



SHEET NO.:

SYSTEM HOST



SYSTEM DEVELOPER

FOREFRONT
POWER

100 Montgomery Street #725
San Francisco, CA 94104
855-204-5083

ELECTRICAL CONSTRUCTORS AND ENGINEERS

E COLLINS
ELECTRICAL CONTRACTORS INC.

1902 Channel Drive
West Sacramento, CA 95691
916-567-1100

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kpff

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ARCHITECT OF RECORD

M M P V d e s i g n

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ARCHITECT / ENGINEER OF RECORD



NO. REVISION DATE

DATE:
03.05.25

PROJECT

BAKERSFIELD CITY
SCHOOL DISTRICT
Bessie Owens

815 Potomac Ave
Bakersfield, CA 93307

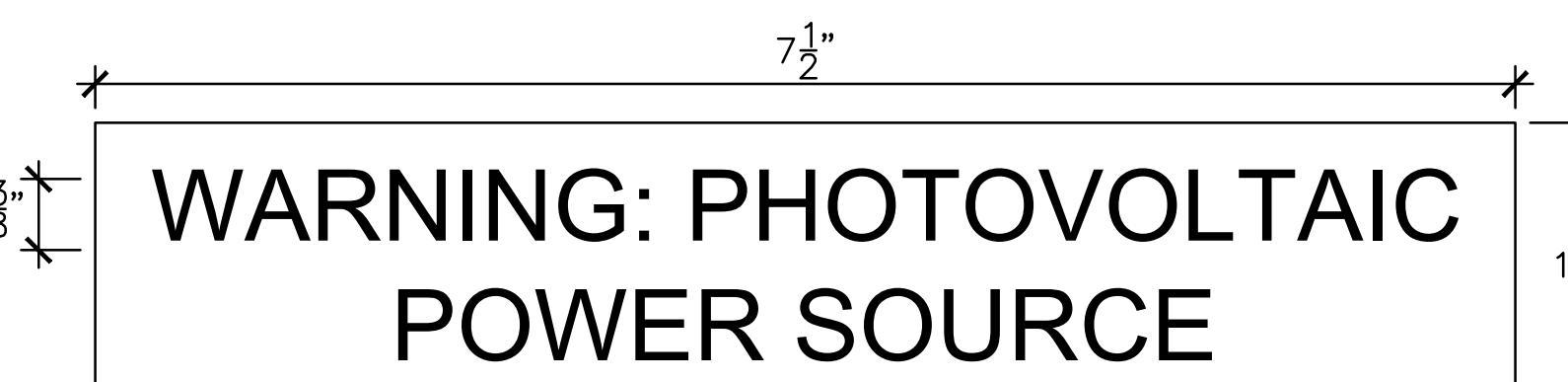
FPP PROJECT #
CA-19-0206

SHEET TITLE

PV SYSTEM TYPICAL
ELECTRICAL
WARNING LABELS

SHEET NO.:

E5.1

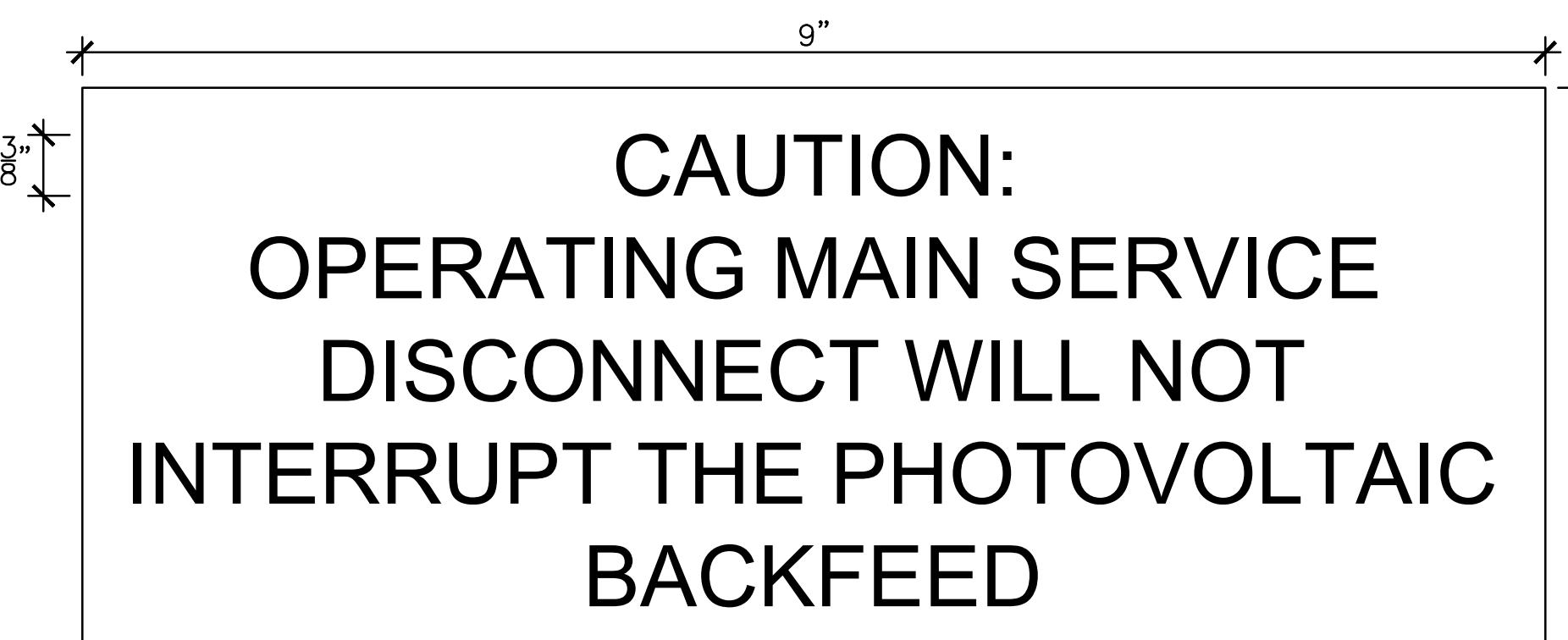


LABEL - 9

SCALE: NONE

9

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



LABEL - 10

SCALE: NONE

10

LOCATION:	MAIN SERVICE DISCONNECT
BACKGROUND	RED
LETTERING	WHITE
NOTES:	



LABEL - 11

SCALE: NONE

LOCATION:	AC DISCONNECT, PANELS, TRANSFORMERS, DAS, & DISCONNECT
BACKGROUND	BLUE
LETTERING	WHITE
NOTES:	

1



Datasheet

50/60 kW, 1000 Vdc String Inverters for North America

The CPS 50/60 kW three-phase string inverters are designed for ground mount, rooftop and carport applications. The units are high performance, advanced, and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.8% peak and 98.5% CEC, wide operating voltages, broad temperature ranges, and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications.

The CPS 50/60KTL products ship with either the Standard wire box or the Rapid Shutdown wire box, each fully integrated and separable with touch-safe fusing, monitoring, and AC and DC disconnect switches. The integrated PLC transmitter in the Rapid Shutdown wire box enables PVRS5 certified module-level rapid shutdown when used with CPS RSD-S-PLC/RSD-D products. The CPS FlexOM Gateway enables monitoring, controls, and remote product upgrades.

Key Features

- NEC 2017/2020 PVRS5 certified for rapid shutdown
- 55 & 66 kVA rating allows max rated active power of ± 0.91 PF
- Selectable max. AC apparent power of 50/55 kVA and 60/66 kVA
- NEC compliant and UL listed arc-fault circuit protection
- 15-90° mounting orientation for low profile roof installs
- Optional FlexOM Gateway enables remote firmware upgrades
- Integrated AC and DC disconnect switches
- 3 MPPTs with 5 inputs each for maximum flexibility
- NEMA Type 4 outdoor rated enclosure
- UL 1741-SA certified to CA Rule 21, including SAB - SA18
- UL 1741-SB and IEEE 1547-2018 certified
- Separable wire-box design for fast service
- Standard 10-year warranty with extensions up to 20 years



50/60KTL Standard Wire Box

CPS SCA50KTL-DO/US-480
CPS SCA60KTL-DO/US-480

50/60KTL Rapid Shutdown Wire Box



This device complies with FCC Rules

Part 15, Subpart B, Class A

Chint Power Systems America

1380 Presidential Drive, Suite 100, Richardson, TX 75081

Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com



Technical Data

Model name	CPS SCA50KTL-DO/US-480	CPS SCA60KTL-DO/US-480
DC Input		
Max. PV power	90 kW (33 kW per MPPT)	
Max. DC input voltage	1000 Vdc	
Operating DC input voltage range	200-950 Vdc	
Startup DC input voltage / power	330 V / 80 W	
Number of MPPTs	3	
MPPT voltage range for Pnom @ PF=0.99	480-850 Vdc	540-850 Vdc
Max. PV short circuit current ¹	163.2 A (54.4 A per MPPT)	
Number of DC inputs	15 inputs, 5 per MPPT	
DC disconnection type	Load-rated DC switch	
DC surge protection	Type II MOV	
AC Output		
Rated AC output power @ PF=0.99 to 0.91 ²	50 kW	60 kW
Max. AC apparent power (selectable) ³	50 / 55 kVA	60 / 66 kVA
Rated output voltage	480 Vac	
Output voltage range ⁴	422-528 Vac	
Grid connection type	3Ø / PE / N (neutral optional)	
Max. AC output current @ 480 Vac	60.2 A (@ 50 kVA) / 66.2 A (@ 55 kVA) / 72.2 A (@ 60 kVA) / 79.4 A (@ 66 kVA)	
Rated output frequency	50 Hz	
Output frequency range ⁴	57-63 Hz	
Power factor	>0.99 (0.8 adjustable)	
Current TRD @ rated load	< 3%	
Max. fault current contribution (1 cycle RMS)	64.1 A (1.06/0.88 PU)	
Max. OCPD rating	110 A	125 A
AC disconnection type	Load-break rated AC switch	
AC surge protection	Type II MOV	
System and Performance		
Topology	Transformerless	
Max. efficiency	98.8%	
CEC efficiency	98.5%	
Standby / night consumption	< 1 W	
Environment		
Enclosure protection degree	NEMA 4X	
Cooling method	Variable speed cooling fans	
Operating temperature range ⁵	-22° to 140°F (-30°C to 60°C)	
Non-operating temperature range	-40° to 158°F (-40° to 70°C)	
Operating humidity	0-100%	
Operating altitude	13123 ft / 4000 m (derating from 9843 ft / 3000 m)	
Audible noise	<60 dBA @ 1 m and 77°F (25°C)	
Display and Communication		
User interface and display	LCD+LED	
Inverter monitoring	SunSpec, Modbus RS485	
Site-level monitoring	CPS FlexOM Gateway (1 per 32 inverters)	
Modbus data mapping	CPS	
Remote diagnostics / firmware upgrade functions	Standard / (with FlexOM Gateway)	
Mechanical		
Dimensions (H x W x D)	39.4 x 23.6 x 10.24 in (1000 x 600 x 260 mm)	
Weight	Inverter: 123.5 lb (56 kg) Wire box: 33 lb (15 kg)	
Mounting / installation angle ⁶	15 to 90 degrees from horizontal (vertical or angled)	
AC termination	M8 stud type terminal block (wire range: #6-3/0 AWG CU/AL; lugs not supplied)	
DC termination?	Screw clamp, negative busbar (RSD version ⁷), wire range: #14-#6 AWG CU	
Fused string inputs (5 per MPPT)	RSD ⁷ and Standard wire box: 20 A fuses provided (fuse values up to 30 A acceptable)	
Safety		
Certifications and standards	UL 1741-SA/SB Ed. 3, UL 16998, UL 1998, CSA-C22.2 NO.107.1-01, IEEE 1547-2018, FCC Part 15	
Selectable grid standards	IEEE 1547-2014, IEEE 1547-2018, CA Rule 21, ISO-NE, HECO	
Smart-grid features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAR, Freq-Watt, Volt-Watt	
Warranty		
Standard	10 years	
Extended terms	15 and 20 years	

¹The sum of parallel-connected PV module short circuit currents.
²Active power derating begins at PF = 0.91 to 0.80 when max AC apparent power is set to 55 or 66 kVA.
³Max. apparent power is set to 50 or 55 kVA when max AC apparent power is set to 50 or 55 kW.
⁴The "output voltage range" and "output frequency range" may differ according to the specific grid standard.
⁵Active power derating begins at 40°C when PF = 0.9 and 45°C when PF = 0.8; and at 50°C when PF = 1 and MPPT=700 Vdc.
⁶Standard wire box only includes fuses and fuse holders on the positive polarity, compliant with NEC 2017/2020.
⁷RSD wire box only includes fuses and fuse holders on the positive polarity, compliant with NEC 2017/2020.
⁸Firmware version 17.02 or later required.

144HC M10 SL Bifacial Module



144HC M10 SL Bifacial Module

144 Half-Cut Monocrystalline 520W - 540W



SYSTEM HOST



SYSTEM DEVELOPER



100 Montgomery Street #725

San Francisco, CA 94104

855-204-5083

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M M P V d e s i g n



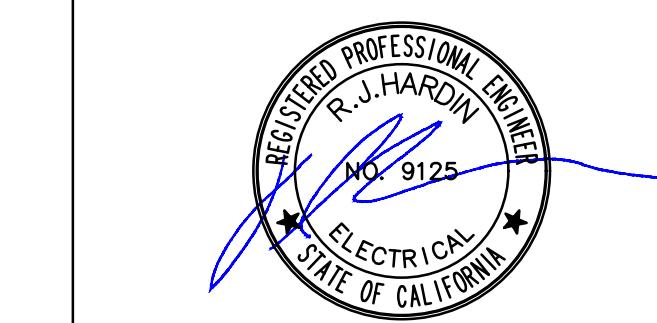
Mariana Moncada, Architect

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619.632.2883

ARCHITECT / ENGINEER OF RECORD



NO. REVISION DATE

DATE: 03.05.25

BAKERSFIELD CITY SCHOOL DISTRICT
Bessie Owens

815 Potomac Ave
Bakersfield, CA 93307

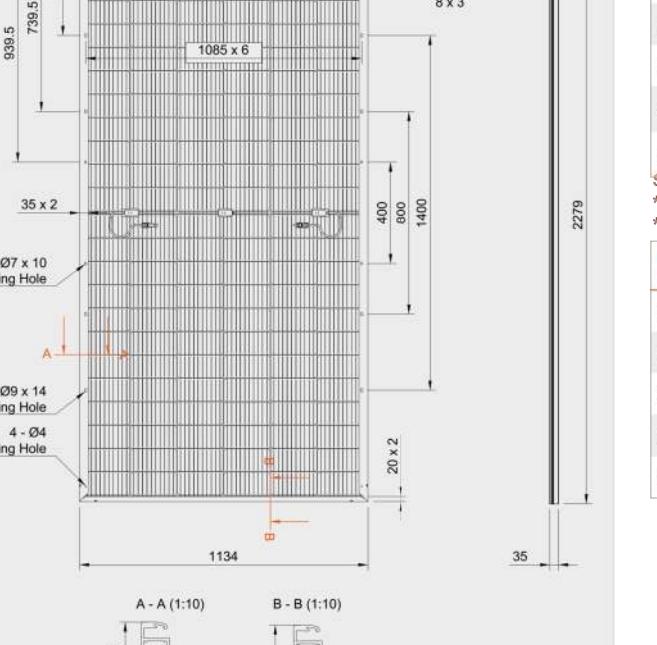
FPP PROJECT # CA-19-0206

SHEET TITLE

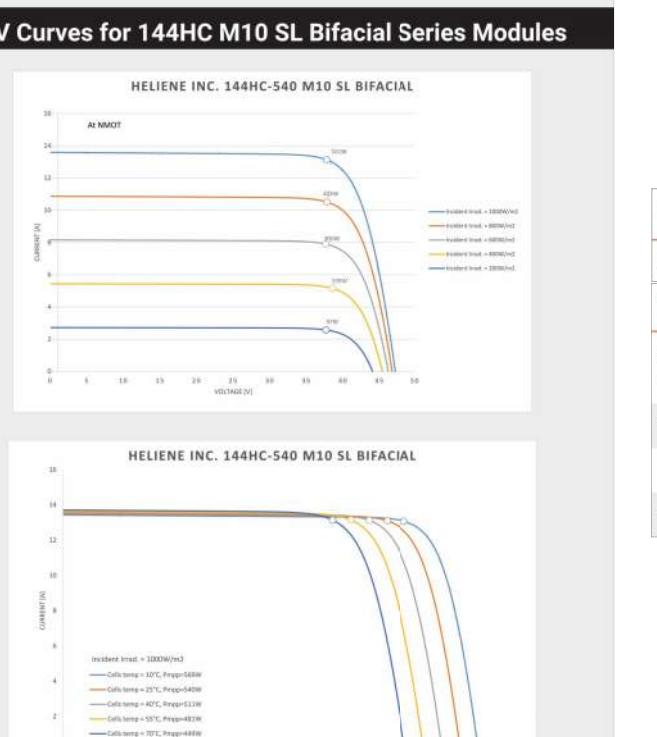
ELECTRICAL EQUIPMENT CUT SHEETS
SHEET NO.: E6.0

The specifications and key features contained in this document may differ slightly from our actual products due to the ongoing innovation and product enhancements. Helene Inc. reserves the right to make necessary adjustment to the information described herein at any time without prior notice. PV modules must be handled and stored only by qualified people. Please ensure ready safety and installation instructions are followed and documented before installing or handling PV modules. For warranty details, please refer to Product Warranty Document, also available for download from Helene website.

Dimensions for 144HC M10 SL Bifacial Series Modules



I-V Curves for 144HC M10 SL Bifacial Series Modules



144HC M10 SL Bifacial Module

Electrical Data (STC)

Peak Rated Power*	P _{mppt} (W)	540	535	530	525	520
Maximum Power Voltage	V _{mppt} (V)	42.5	42.13	41.94	41.75	41.56
Maximum Power Current	I _{mppt} (A)	12.77	12.70	12.64	12.58	12.52
Open Circuit Voltage*	V _{oc} (V)	50.22	49.47	49.72	49.47	49.22
Short Circuit Current*	I _{sc} (A)	13.56	13.49	13.46	13.44	13.40
Module Efficiency	Eff (%)	20.1	20.7	20.5	20.3	20.1
Maximum Series Fuse Rating	MF (A)	30	30	30	30	30
Power Sorting Range	[-0.7+3%]					

Bifaciality Factor***

70 ± 5%

STC - Standard Test Conditions: Irradiance 1000 W/m², Air mass AM 1.5, Cell temperature 25°CEfficiency 97.5%, Irradiance 1300 W/m², Air mass AM 1.5, Cell temperature 25°C, Production Tolerance ±3%, Production Loss ±4%***Efficiency Factor P_{mppt} / P_{mppt} (STC), where P_{mppt} and P_{mppt} (STC) are tested at STC

Electrical Data (NMOT)

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-LTO-E
This document is used to demonstrate compliance with requirements in 110.9, 130.0, 130.2, 140.7, and 141.0(b)2L for outdoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e)6, 180.1(a) and 180.2(b)4Bv for outdoor lighting scopes using the prescriptive path for multifamily and mixed-use occupancies. Multifamily includes dormitory and senior living facilities.

Project Name: Bakersfield City School District - Bessie Owens Elementary School Report Page: (Page 1 of 7)
Project Address: 815 Potomac Ave Date Prepared: 5/2/2024

A. GENERAL INFORMATION

01 Project Location (city)	Bakersfield	04 Total Illuminated Hardscape Area (ft ²)	15536
02 Climate Zone	13		
03 Outdoor Lighting Zone per Title 24 Part 1 10.114 or as designated by Authority Having Jurisdiction (AHJ):			
<input type="checkbox"/> L2-0: Very Low - Undeveloped Parkland <input type="checkbox"/> L2-2: Moderate - Urban Clusters <input type="checkbox"/> L2-4: High - Must be reviewed by CA Energy Commission for Approval			
<input type="checkbox"/> L2-1: Low - Rural Areas <input type="checkbox"/> L2-3: Moderately High - Urban Areas			
05 Occupancy Types within Project			
• All Other Occupancies			

B. PROJECT SCOPE

This table includes outdoor lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.7 / 170.2(e)6 or 141.0(b)2L / 180.2(b)4Bv for alterations.

My Project Consists of:	01	02
<input type="checkbox"/> New Lighting System	Must Comply with Allowances from 140.7 / 170.2(e)6	
<input type="checkbox"/> Altered Lighting System	Is your alteration increasing the connected lighting load (Watts)? <input type="radio"/> Yes <input type="radio"/> No	
03	04	05
% of Existing Luminaires Being Altered ¹	Sum Total of Luminaires Being Added or Altered	Calculation Method
<input type="checkbox"/> < 10% <input type="checkbox"/> > 10% and < 50% <input type="checkbox"/> >= 50%		

Please proceed to Table F, Outdoor Lighting Fixture Schedule to define the project's luminaires.

¹ FOOTNOTES: % of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100.

Generated Date/Time: Documentation Software: EnergyPro
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Compliance ID: EnergyPro-7514-0524-0737 Schema Version: rev 20220101 Report Generated: 2024-05-02 09:16:36

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-LTO-E
Project Name: Bakersfield City School District - Bessie Owens Elementary School Report Page: (Page 4 of 7)
Project Address: 815 Potomac Ave Date Prepared: 5/2/2024

H. OUTDOOR LIGHTING CONTROLS

This table demonstrates compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (ie untouched) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application.

Outdoor lighting for nonresidential buildings, parking garages and common service areas in multifamily buildings must be documented separately from outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit

Mandatory Controls for Nonresidential Occupancies, Parking Garages & Common Areas in Multifamily Buildings

01	02	03	04	05
Area Description	Shut-Off 130.2(c1) / 160.5(c)	Auto-Schedule 130.2(c2) / 160.5(c)	Motion Sensor 130.2(c3) / 160.5(c)	Field Inspector
Exterior Lights	Astronomical Timer	Provided	Provided	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

¹ FOOTNOTE: Text has been abbreviated, please refer to Table 160.5-A to confirm compliance with the specific light source technologies listed.

² Authority having jurisdiction may ask for cutsheets or other documentation to confirm compliance of light source.

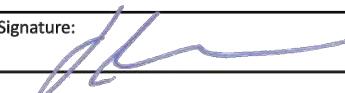
³ Recessed luminaires marked for use in fire-rated installations, and recessed luminaires installed in non-insulated ceilings are excepted from ii and iii.

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CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Compliance ID: EnergyPro-7514-0524-0737 Schema Version: rev 20220101 Report Generated: 2024-05-02 09:16:36

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-LTO-E
Project Name: Bakersfield City School District - Bessie Owens Elementary School Report Page: (Page 7 of 7)
Project Address: 815 Potomac Ave Date Prepared: 5/2/2024

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

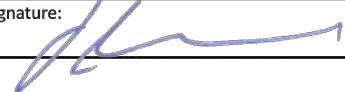
Documentation Author Name: Documentation Author Signature: 
Richard J. Hardin

Company: Hardin-Davidson Engineering Signature Date: 2024-05-02
Address: 356 Pollasky Ave CEA/HERS Certification Identification (if applicable): E9125
City/State/Zip: Clovis CA 93612 Phone: 559.323.4995

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

- The information provided on this Certificate of Compliance is true and correct.
- I am designated as the responsible person and responsible for accepting responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
- 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.
- 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 the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections.
- I warrant 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: Responsible Designer Signature: 
Richard J. Hardin

Company: Hardin Davidson Engineering Date Signed: 2024-05-02
Address: 356 Pollasky Ave, Suite 200 License: E9125
City/State/Zip: Clovis CA 93612 Phone: 559.323.4995

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CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Compliance ID: EnergyPro-7514-0524-0737 Schema Version: rev 20220101 Report Generated: 2024-05-02 09:16:36

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-LTO-E
Project Name: Bakersfield City School District - Bessie Owens Elementary School Report Page: (Page 2 of 7)
Date Prepared: 5/2/2024

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through N. 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.

Calculations of Total Allowed Lighting Power (Watts) 140.7 / 170.2(e)6 or 141.0(b)2L / 180.2(b)4Bv								Compliance Results				
01	02	03	04	05	06	07	08	09	07 must be >= 08	07	08	09
General Hardscape Allowance + 140.7(d)1 / 170.2(e)6 (See Table I)	Per Application + 140.7(d)2 / 170.2(e)6 (See Table J)	Sales Frontage + 140.7(d)2 / 170.2(e)6 (See Table L)	Ornamental + 140.7(d)2 / 170.2(e)6 (See Table M)	Existing Power Allowance 141.0(b)2L / 180.2(b)4Bv (See Table N)	=	Total Allowed (Watts)	>	Total Actual (Watts)	07 must be >= 08	07	08	09
576	+	---	+	---	+	576	≥	232	COMPLIES	N/A		
Shielding Compliance (See Table G for Details)												
Controls Compliance (See Table H for Details)												

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.

F. OUTDOOR LIGHTING FIXTURE SCHEDULE

For new or altered lighting systems demonstrating compliance with 140.7 / 170.2(e)6 all new luminaires being installed and any existing luminaires remaining or being moved within the spaces covered by the permit application are included in the Table below. For altered lighting systems using the Existing Power method per 141.0(b)2L only new luminaires being installed and replacement luminaires being installed as part of the project scope are included (ie, existing luminaires remaining or existing luminaires being moved are not included). Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H, and are not included here. All other multifamily outdoor lighting is included here.

Designed Wattage:

01 02 03 04 05 06 07 08 09 10

Name or Item Tag Complete Luminaire Description Watts per luminaire^{1,2} How is Wattage determined Total Number Luminaire¹ Luminaire Status³ Excluded per 140.7(a) / 170.2(e)6A Design Watts Cutoff Req. > 6,200 initial lumen output 130.2(b) / 160.5(c)⁴ Field Inspector Pass Fail Total Design Watts: 232

A 29W LED Linear 29 Mfr. Spec 8 New 232 NA: 6200 lumens

¹ NOTES: Selections with a * require a note in the space below explaining how compliance is achieved.
² EX: Luminaire is lighting a space; EXCEPTION 2 to 130.2(b)
³ FOOTNOTES: Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(b)
⁴ For linear luminaires, wattage should be indicated as W/ft instead of Watts/luminaire. Total linear feet should be indicated in column 05 instead of number of luminaires.

G. SHIELDING REQUIREMENTS (BUG)

This section does not apply to this project.

Generated Date/Time: Documentation Software: EnergyPro
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Compliance ID: EnergyPro-7514-0524-0737 Schema Version: rev 20220101 Report Generated: 2024-05-02 09:16:36

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-LTO-E
Project Name: Bakersfield City School District - Bessie Owens Elementary School Report Page: (Page 5 of 7)
Date Prepared: 5/2/2024

I. LIGHTING POWER ALLOWANCE (per 140.7 / 170.2(e))

This table includes areas using allowance calculations per 140.7 / 170.2(e). General Hardscape Allowance is per Table 140.7-A/Table 170.2-8 while "Use it or lose it" Allowances are per Table 140.7-B/Table 170.2-5. Indicate which allowances are being used to expand sections for user input. Luminaires that qualify for one of the "Use it or lose it" allowances shall not qualify for another "Use it or lose it" allowance.

Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H, and are not included here. All other multifamily outdoor lighting is included here.

Calculated General Hardscape Lighting Power Allowance per Table 140.7-A for Nonresidential & Hotel/Motel											
01 "Use it or lose it" Allowance (select all that apply) (select all that apply)											
<input type="checkbox"/> General Hardscape Allowance Table I (below) <input type="checkbox"/> Per Application Table J <input type="checkbox"/> Sales Frontage Table K <input type="checkbox"/> Ornamental Table L <input type="checkbox"/> Per Specific Area Table M											
02	03	04	05	06	07	08	09				
Area Description	Area Wattage Allowance (AWA)		Linear Wattage Allowance (LWA)		Total General AWA + LWA (Watts)						
	Illuminated Area (ft ²)	Allowed Density (W/ft ²)	Area Allowance (Watts)	Perimeter Length (ft)	Allowed Density (W/ft)	Linear Allowance (Watts)					
Solar Canopies	15536	0.021	326.3	0	0.2	0	326				
Initial Wattage Allowance for Entire Site (Watts): 250											
Instances of Initial Wattage Allowance (L2 0 only): 576											
Total General Hardscape Allowance (Watts): 576											

J. LIGHTING ALLOWANCE: PER APPLICATION

This section does not apply to this project.

K. LIGHTING ALLOWANCE: SALES FRONTAGE

This section does not apply to this project.

L. LIGHTING ALLOWANCE: ORNAMENTAL

This section does not apply to this project.

Generated Date/Time: Documentation Software: EnergyPro
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Compliance ID: EnergyPro-7514-0524-0737 Schema Version: rev 20220101 Report Generated: 2024-05-02 09:16:36

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-LTO-E
Project Name: Bakersfield City School District - Bessie Owens Elementary School Report Page: (Page 6 of 7)
Date Prepared: 5/2/2024

M. LIGHTING ALLOWANCE: PER SPECIFIC AREA

This section does not apply to this project.

N. EXISTING CONDITIONS POWER ALLOWANCE (alterations only)

This section does not apply to this project.

O. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection has 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-LTO-E - Must be submitted for all buildings

P. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selection has 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 must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: <http://www.energy.ca.gov/124/attcp/providers.html>

Form/Title: NRCA-LTO-2-A - Must be submitted for all outdoor lighting controls except for alterations where controls are added to <= 20 luminaires.

Systems/Spaces To Be Filed: Exteriors Lights:

Generated Date/Time: Documentation Software: EnergyPro
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Compliance ID: EnergyPro-7514-0524-0737 Schema Version: rev 20220101 Report Generated: 2024-05-02 09:16:36

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-LTO-E
Project Name: Bakersfield City School District - Bessie Owens Elementary School Report Page: (Page 7 of 7)
Date Prepared: 5/2/2024

Generated Date/Time: Documentation Software: EnergyPro
CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance Report Version: 2022.0.000 Compliance ID: EnergyPro-7514-0524-0737 Schema Version: rev 20220101 Report Generated: 2024-05-02 09:16:36

NO. REVISION DATE

DATE: 03.05.25

PROJECT:

BAKERSFIELD CITY SCHOOL DISTRICT

Bessie Owens

815 Potomac Ave Bakersfield, CA 93307

FPF PROJECT #

CA-19-0206

SHEET TITLE

OUTDOOR LIGHTING T24 COMPLIANCE REPORT

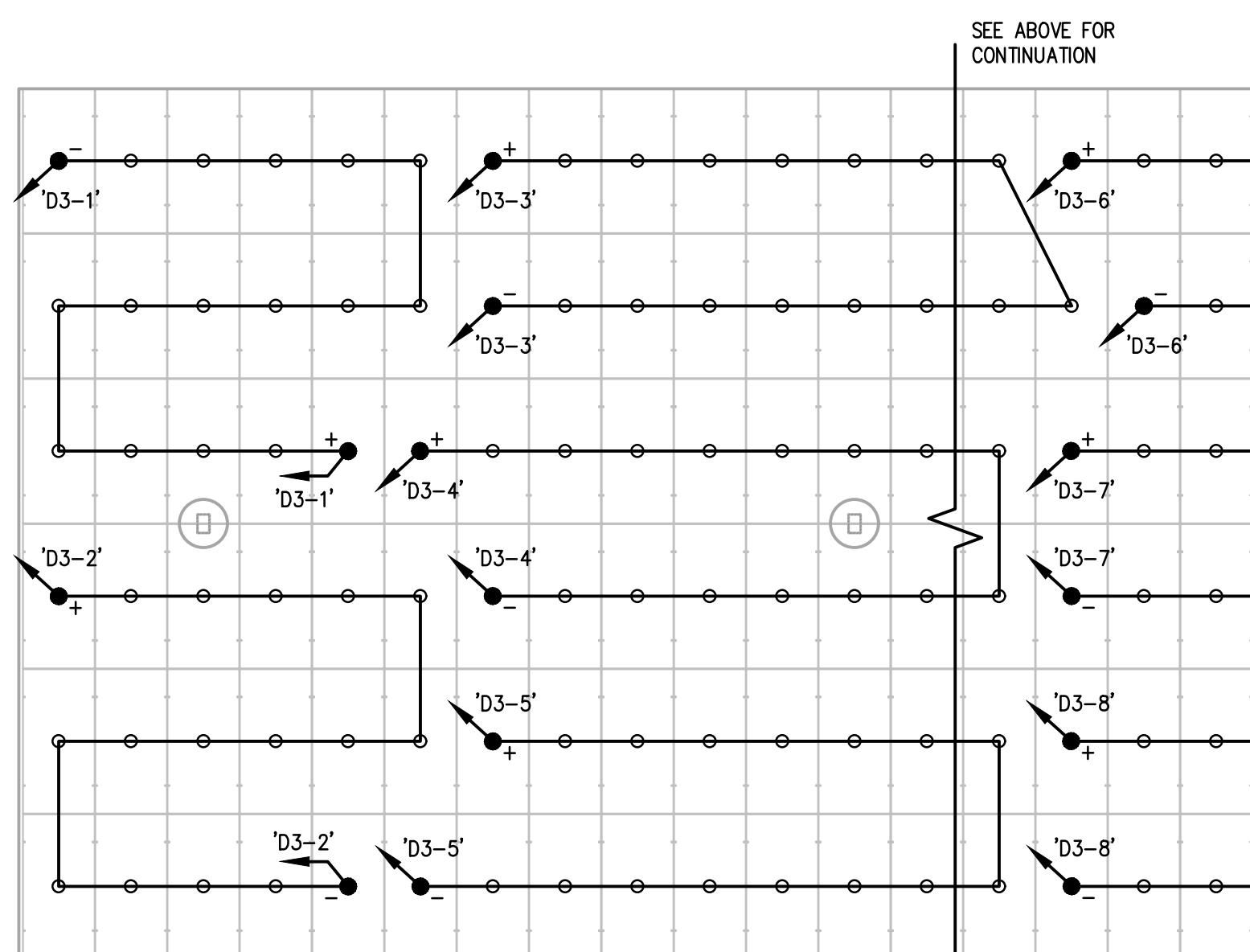
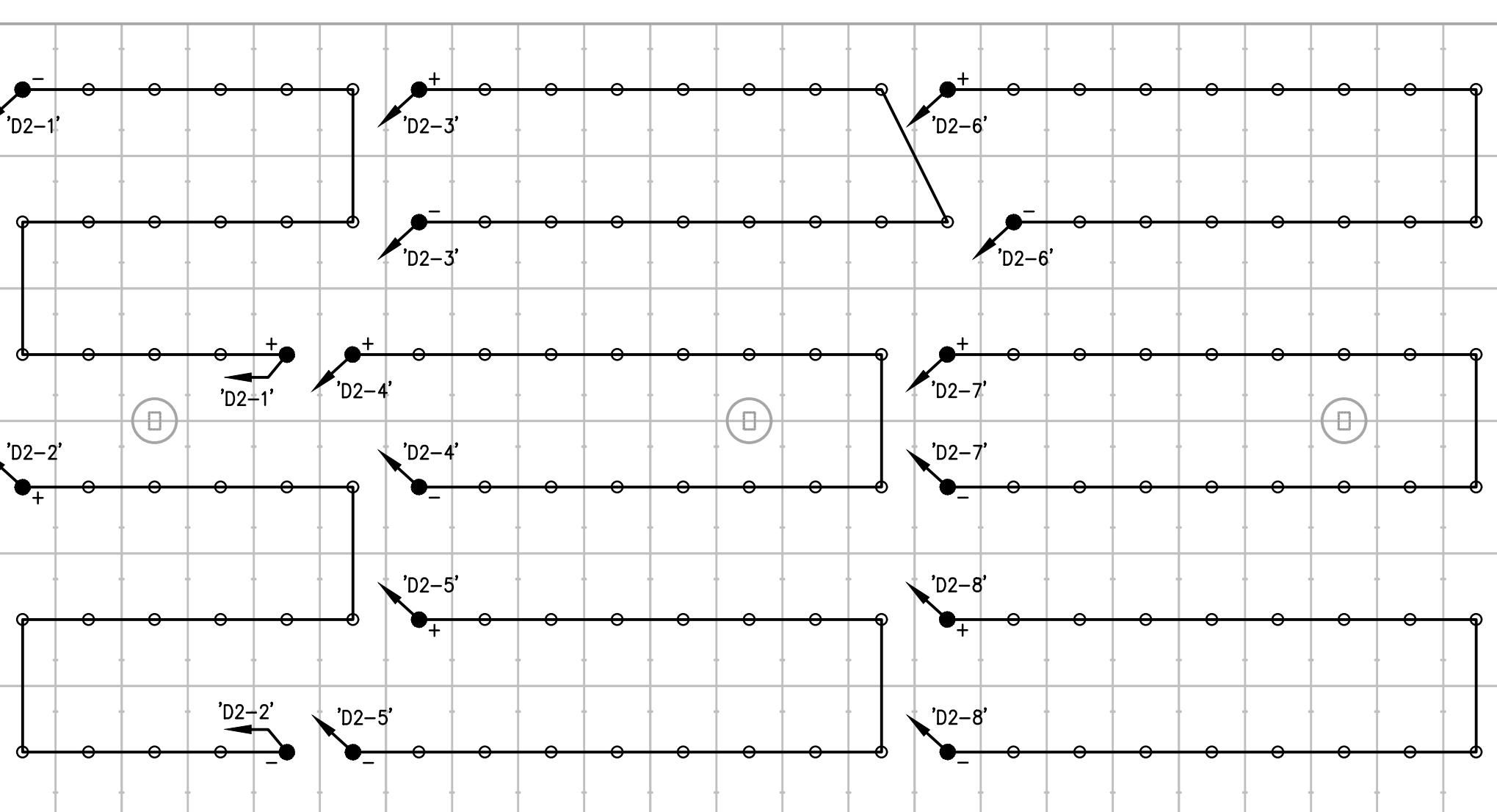
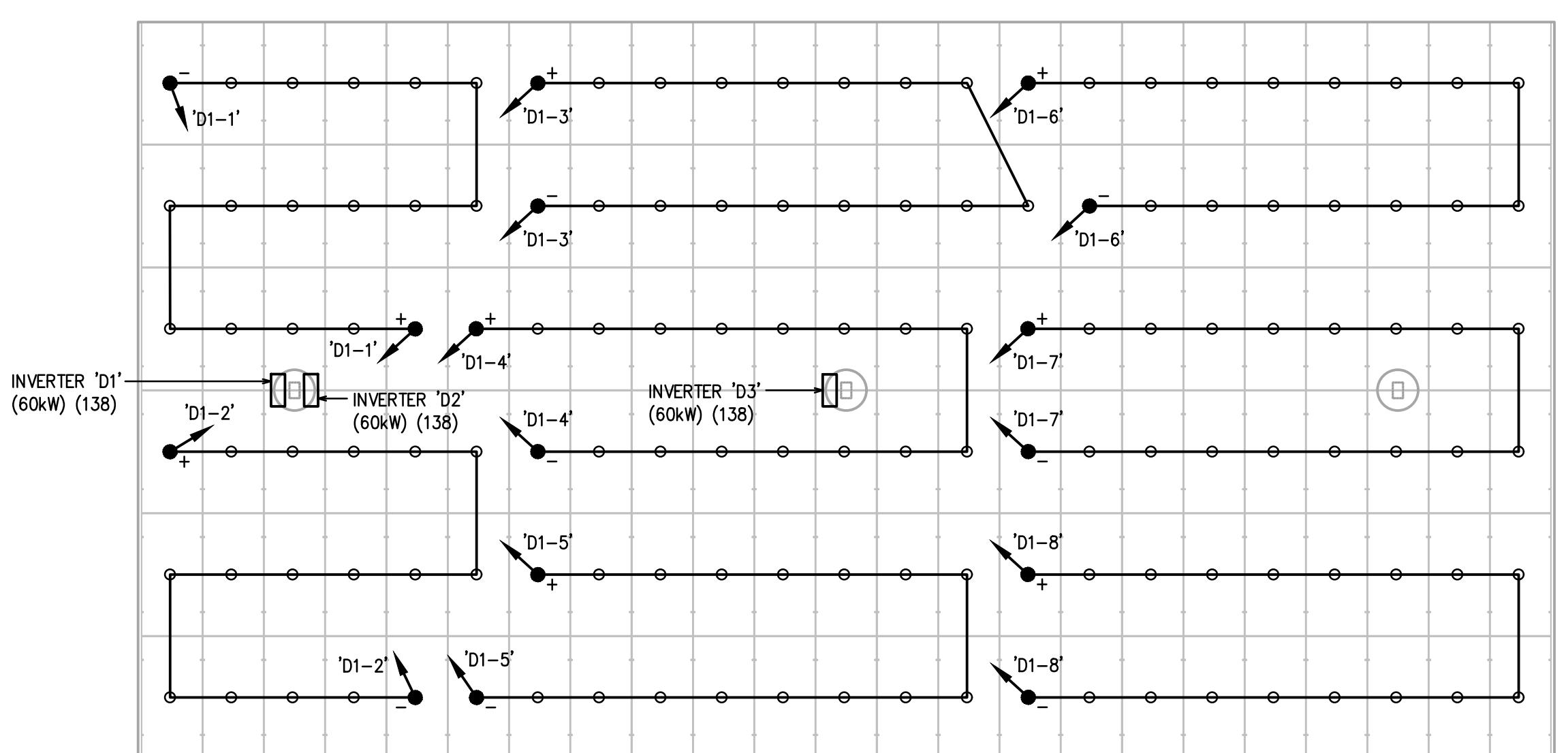
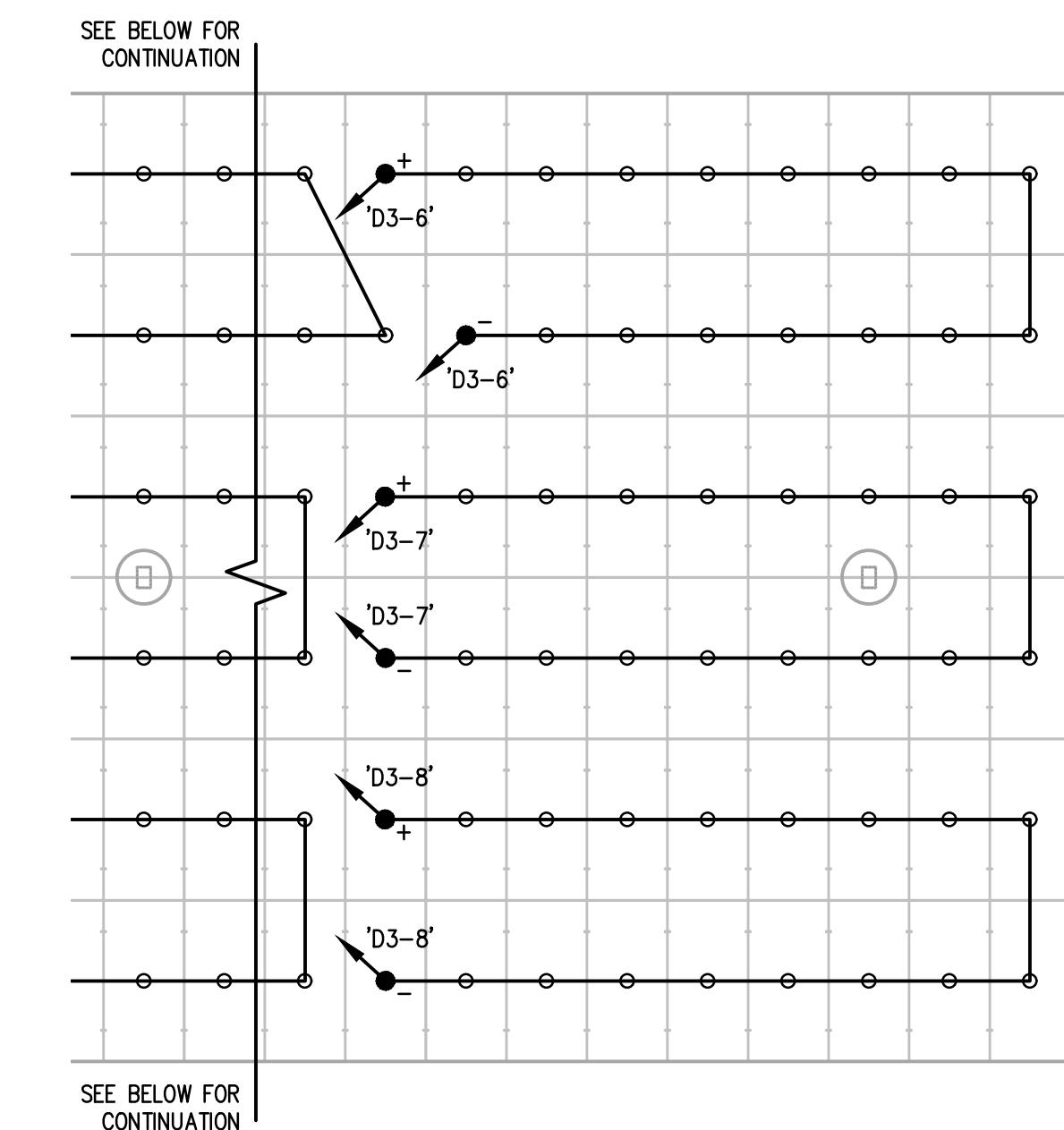
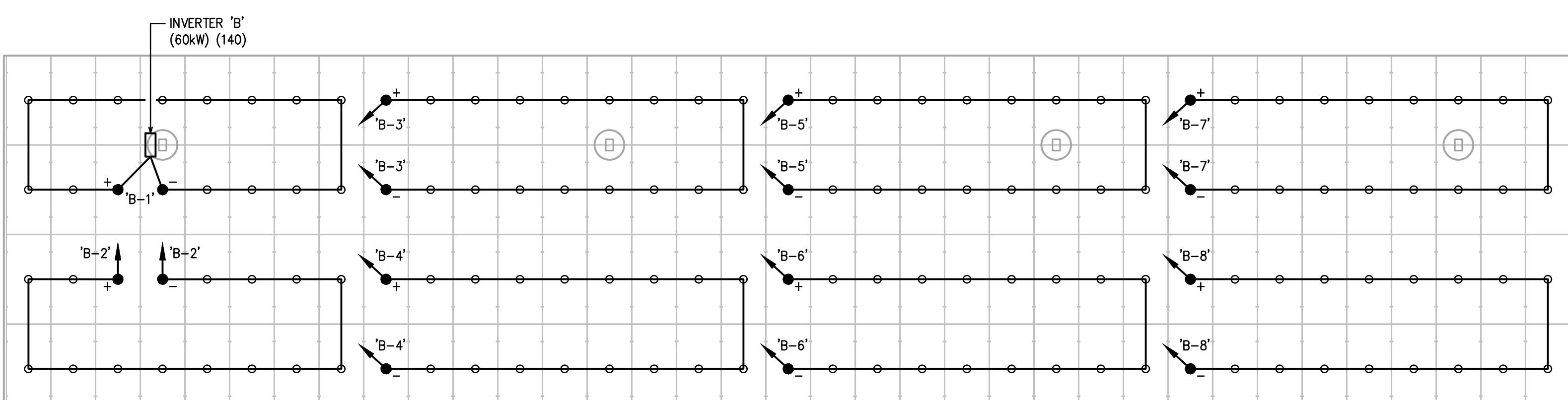
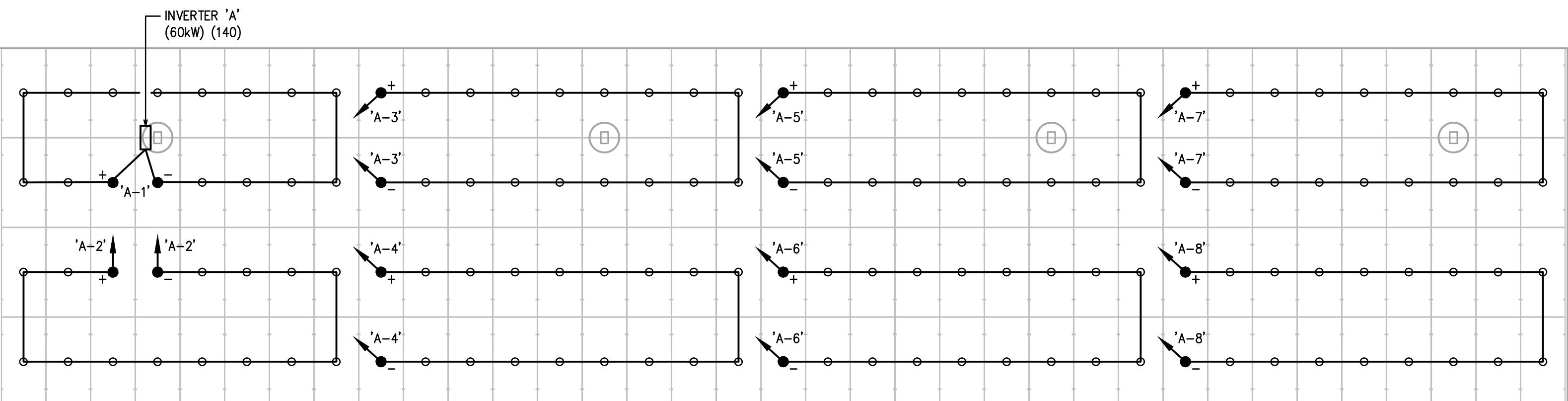
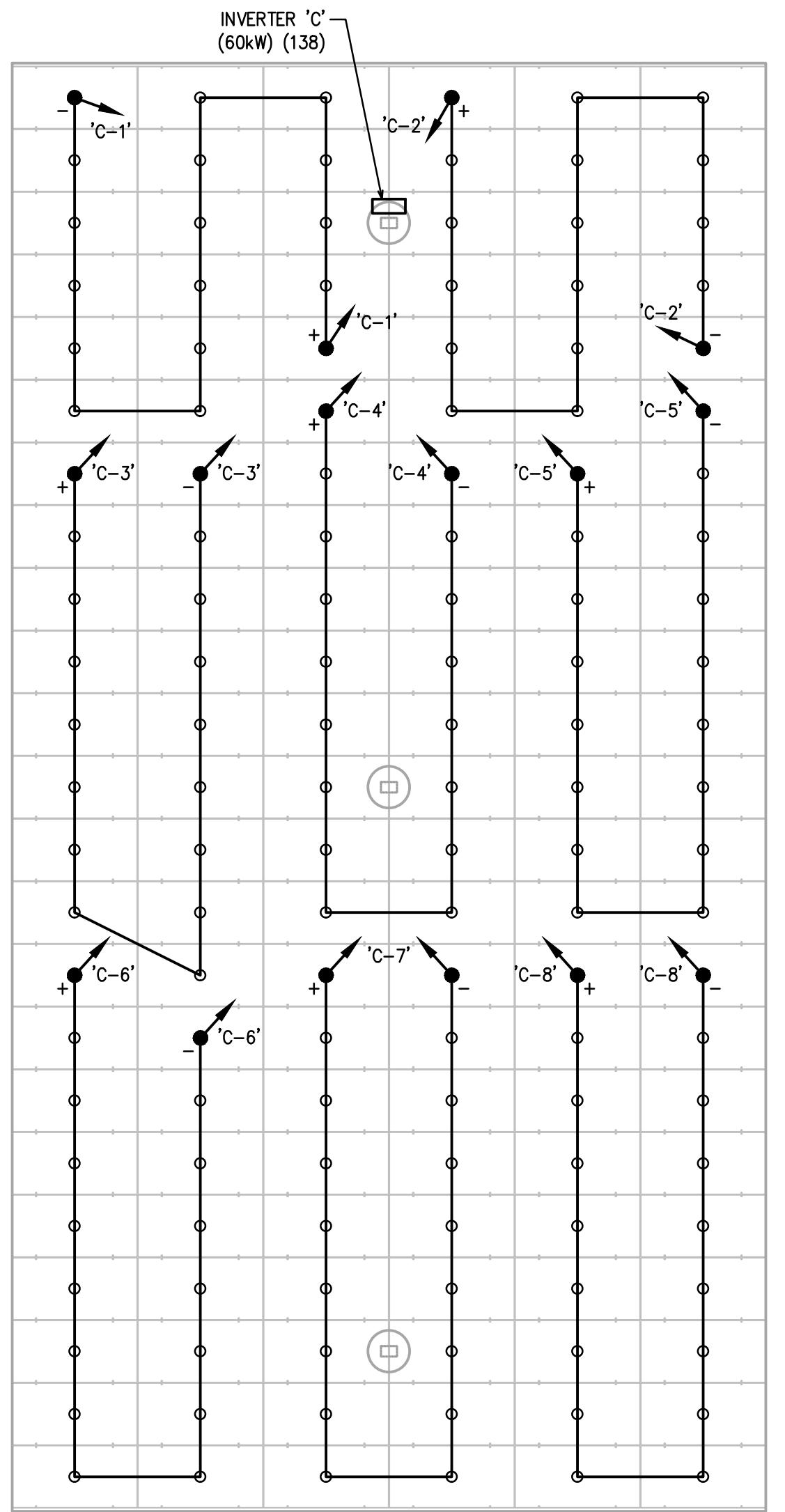
SHEET NO.:

E7.0

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-LTO-E
Project Name: Bakersfield City School District - Bessie Owens Elementary School Report Page: (Page 3 of 7)
Date Prepared: 5/2/2024

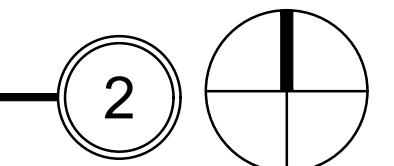
F. OUTDOOR LIGHTING FIXTURE SCHEDULE

For new or altered lighting systems demonstrating compliance with 140.7 / 170.2(e)6 all new luminaires being installed and any existing luminaires remaining or being moved within the spaces covered by the permit application are included in the Table below. For altered lighting systems using the Existing Power method per 141.0(b)2L only new luminaires being installed and replacement luminaires being installed as part of the project scope are included (ie



PV SYSTEM ARRAY STRING CABLING PLAN

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



E8.0

SYSTEM HOST

SYSTEM DEVELOPER

FOREFRONT
POWER
100 Montgomery Street #725
San Francisco, CA 94104
855-204-5083

ECOLLINS
ELECTRICAL CONTRACTOR INC.
1902 Channel Drive
West Sacramento, CA 95691
916-567-1100

kpff

3131 CAMINO DEL RIO NORTH, SUITE 1080
SAN DIEGO, CA 92108
619.521.8500

ARCHITECT OF RECORD
M M P V d e s i g n

Mariana Moncada, Architect
718 West Arbor Drive
San Diego, CA 92103
619.632.2883

ARCHITECT / ENGINEER OF RECORD


NO. REVISION DATE
DATE: 03.05.25

PROJECT
BAKERSFIELD CITY
SCHOOL DISTRICT
Bessie Owens

815 Potomac Ave
Bakersfield, CA 93307

FFP PROJECT #
CA-19-0206

SHEET TITLE

PV SYSTEM ARRAY
ELECTRICAL STRING
CABLING PLAN

SHEET NO.:

S_{DS}=1.5 (MAX), WIND SPEED 98 MPH, EXPOSURE C, ROOF SNOW LOAD=0PSF (NOT ALLOWED)

TEICHERT

DSA-PC PV STRUCTURE SYSTEM

	SHEET	DESCRIPTION
<input checked="" type="checkbox"/>	S100	TITLE SHEET
<input checked="" type="checkbox"/>	S101	GENERAL STRUCTURAL NOTES
<input checked="" type="checkbox"/>	S102	GENERAL STRUCTURAL NOTES
<input checked="" type="checkbox"/>	S103	TESTING AND INSPECTION FORM
<input checked="" type="checkbox"/>	S200	6 PANEL T-STRUCTURE FRAMING PLAN AND SCHEDULE
<input checked="" type="checkbox"/>	S200A	5 PANEL T-STRUCTURE FRAMING PLAN
<input checked="" type="checkbox"/>	S201	6 AND 5 PANEL T-STRUCTURE SECTIONS
<input checked="" type="checkbox"/>	S202	4 PANEL L-STRUCTURE FRAMING PLAN AND SCHEDULE
<input checked="" type="checkbox"/>	S203	4 PANEL L-STRUCTURE SECTION
<input checked="" type="checkbox"/>	S204	3 PANEL L-STRUCTURE FRAMING PLAN AND SCHEDULE
<input checked="" type="checkbox"/>	S205	3 PANEL L-STRUCTURE SECTION
<input checked="" type="checkbox"/>	S300	PIER DETAILS-EMBEDDED COLUMN
<input checked="" type="checkbox"/>	S400	STEEL DETAILS
<input checked="" type="checkbox"/>	S501	COLD-FORMED DETAILS
<input checked="" type="checkbox"/>	S502	PURLIN BRACING DETAILS
<input checked="" type="checkbox"/>	S600	EQUIPMENT ANCHORAGE AND BARRICADE DETAILS
<input checked="" type="checkbox"/>	S601	MISC AND FENCE DETAILS
<input checked="" type="checkbox"/>	S602	CONDUITS ROUTING & BOLLARDS
TOTAL SHEET COUNT: 14 14		

NOTES: 1. PC APPLICANT TO DENOTE WHICH OPTIONAL SHEETS TO INCLUDE IN THE SITE-SPECIFIC PROJECT BY PLACING A MARK IN THE CHECK BOX NEXT TO THE APPROPRIATE SHEETS

SCOPE OF WORK

THE SCOPE OF WORK INCLUDES THE INSTALLATION OF NEW SOLAR PHOTOVOLTAIC CARPORTS, (INCLUDING STRUCTURAL STEEL FRAMING, CONCRETE FOUNDATIONS, AND COLD-FORMED PURLINS), AS WELL AS A FENCED INVERTER EQUIPMENT PAD (INCLUDING INVERTER PAD, FENCING, BOLLARDS, AND EQUIPMENT MOUNTING DETAILS).

PROJECT DIRECTORY

STRUCTURAL ENGINEER
KPFF CONSULTING ENGINEERS
3131 CAMINO DEL RIO NORTH, SUITE 1080
SAN DIEGO, CA 92108
PHONE: (619) 521-8500

VENDOR
TEICHERT SOLAR
3500 AMERICAN RIVER DR
SACRAMENTO, CA 95864
T 916 484 3011

PRINCIPAL: SHANE NOEL, SE
PROJECT MANAGER: JAMES MALLARD, PE

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

- THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE IS RESPONSIBLE FOR SELECTING AND UTILIZING THE CORRECT MEMBER SHEETS FOR THE SITE-SPECIFIC CONDITION SUCH THAT THE SITE-SPECIFIC S_{DS} AND S₁ ARE LESS THAN THOSE NOTED IN THE DESIGN PARAMETER CHECKLIST.
- THE SEISMIC FORCE-RESISTING SYSTEM HAS BEEN DESIGNED TO TWO SEISMIC CRITERIA, BASED ON THE PARAMETERS IN THE DESIGN PARAMETER CHECKLIST. THIS PC MAY BE USED IN ANY LOCATION WHERE C_s, CALCULATED USING R = 1.25, DOES NOT EXCEED UPPERCASE LIMIT C_s = 1.20. THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE IS RESPONSIBLE FOR ENSURING THAT THE SITE-SPECIFIC C_s VALUE, CALCULATED APPROPRIATELY, IS LESS THAN OR EQUAL TO C_s = 1.20.
- THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE IS RESPONSIBLE FOR VERIFYING SITE-SPECIFIC WIND PARAMETERS AT ANY AND ALL SITES WHERE THIS PC IS USED. WIND PRESSURES BASED ON SITE-SPECIFIC PARAMETERS SHALL BE LESS THAN OR EQUAL TO WIND PRESSURES CALCULATED FROM THE PARAMETERS GIVEN IN THE DESIGN PARAMETER CHECKLIST.
- SITE SPECIFIC PLANS TO SHOW SITE SPECIFIC SOLAR PANEL LAYOUT.
- SITE SPECIFIC SOLAR PANEL LAYOUT SHALL SPECIFY THE MAXIMUM DIMENSION TO THE OUTSIDE EDGES OF SOLAR PANELS OR STRUCTURAL STEEL -WHICHEVER IS GREATER. THIS DIMENSION SHALL BE LESS THAN THE MAXIMUM ALLOWABLE DIMENSION OF THE STRUCTURE SHOWN ON THE PC PLANS (OR SCHEDULES).
- A SITE SPECIFIC GEOTECHNICAL REPORT SHALL BE SUBMITTED JUSTIFYING THE SOILS VALUES SELECTED. A SITE SPECIFIC GEOTECHNICAL IS REQUIRED TO USE THIS PC.
- SITE SPECIFIC DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE TO SELECT SOIL CLASS FOR SITE SPECIFIC NOTES.
- THE RESPONSIBILITY OF REVIEW AND APPROVAL OF ALL PROJECT-RELATED SUBMITTALS LIES WITH THE SITE-SPECIFIC STRUCTURAL ENGINEER OF RECORD (SEOR). KPFF WILL NOT BE REQUIRED TO SIGN DSA FORMS OR REVIEW SUBMITTALS FOR SITE-SPECIFIC PROJECTS UNLESS ACTING AS THE SITE-SPECIFIC SEOR.
- WHEN SITE-SPECIFIC PROJECT IS LOCATED IN A FLOOD ZONE OTHER THAN ZONE X, A LETTER STAMPED AND SIGNED BY THE GEOTECHNICAL ENGINEER OF RECORD IS REQUIRED TO VALIDATE THAT THE ALLOWABLE SOIL VALUES SPECIFIED IN THIS PC ARE STILL APPLICABLE. LOCATION OF ELECTRICAL ELEMENTS SHALL CONFORM TO ASCE 24, SECTION 7.2 PER DSA PR 14-01 SECTION 12.1.
- INTENDED USE AND OCCUPANCY, OCCUPANT LOAD FACTOR AND RISK CATEGORY SHALL BE NOTED ON THE SITE-SPECIFIC PLANS.
- WET STAMPED & SIGNED COPIES OF PC PLANS ARE NOT REQUIRED FOR SITE SPECIFIC PC USE.

BUILDING DATA

- CLASSIFICATION OF CONSTRUCTION IS TYPE IIB.
- OCCUPANCY CLASSIFICATION:
 - A: U: MAX. AREA = 3,000 FT²
 - B: A-2: MAX. AREA = 9,500 FT²
 - C: E: MAX. AREA = 14,500 FT²
 - D: S-2: MAX. AREA = UNLIMITED
- RISK CATEGORY IS II
- THE STRUCTURE IS A SINGLE-STORY OPEN CARPORT STRUCTURE.
- FOR GENERAL STRUCTURAL NOTES SEE SHEETS S100.

CODES AND STANDARDS

ALL WORK SHALL CONFORM TO:

- 2022 CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 C.C.R.
- 2022 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.
(2021 INTERNATIONAL BUILDING CODE AND 2022 CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.
(2020 NATIONAL ELECTRIC CODE AND 2022 CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 C.C.R.
(2021 UNIFORM MECHANICAL CODE AND 2022 CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.
(2021 UNIFORM PLUMBING CODE AND 2022 CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 C.C.R.
- 2022 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 C.C.R.
(2021 INTERNATIONAL FIRE CODE AND 2022 CALIFORNIA AMENDMENTS)
- 2022 CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 CCR
- 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11, TITLE 24 C.C.R.
- 2022 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 C.C.R.
- TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS
- ASCE 7-16 (SUPPLEMENT 3)
- FOR A LIST OF APPLICABLE STANDARDS INCLUDING CALIFORNIA AMENDMENT TO THE NFPA STANDARDS, REFER TO CBC CHAPTER 35 AND CFC CHAPTER 80

PV PANEL NOTES:

- SOLAR PANELS SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL1703 OR WITH BOTH UL 61730-1 AND UL 61730-2 PER CBC SECTION 1511.9 FOR THE PANEL ORIENTATIONS SHOWN ON PC PLANS.
- THE LOAD RATINGS FOR THE SOLAR PANELS SELECTED BY THE CONTRACTOR MUST MEET OR EXCEED THE ACTUAL DESIGN WIND PRESSURES SHOWN BELOW. ONLY 4 POINTS OF CONNECTION ON THE SOLAR PANEL ARE ALLOWED TO MEET THE LOAD RATING.
MINIMUM DOWNWARD WIND LOAD [ASD]: 24.3 PSF (BASED ON MINIMUM PANEL SIZE PER NOTE 4)
MINIMUM UPWARD WIND LOAD [ASD]: 26.3 PSF (BASED ON MINIMUM PANEL SIZE PER NOTE 4)
- THE OWNER'S SITE PROFESSIONAL SHALL PROVIDE PRODUCT DOCUMENTATION FROM THE SOLAR PANEL SUPPLIER, INCLUDING PANEL DIMENSIONS AND LOAD RATINGS, TO THE PC DESIGN PROFESSIONAL FOR REVIEW PRIOR TO SUBMITTAL TO DSA FOR PLAN REVIEW. DOCUMENTATION SHALL IDENTIFY PANEL LOAD RATING AS ALLOWABLE OR STRENGTH LEVEL AND SPECIFY WHETHER THE LOADS LISTED ARE DESIGN OR TEST VALUES FROM THE UL 1703 TESTS. UPON ACCEPTANCE, THE PC DESIGN PROFESSIONAL SHALL PROVIDE A STATEMENT TO OWNER'S SITE PROFESSIONAL THAT THE SOLAR PANELS ARE IN COMPLIANCE WITH THE APPROVED PC PLANS. THE OWNER'S SITE PROFESSIONAL SHALL SUBMIT THE STATEMENT AND PANEL DOCUMENTATION TO DSA WITH THE PLAN REVIEW PACKAGE.
- MINIMUM PV PANEL AREA: 78.13" x 39" (21.16 SQUARE FEET)
MAXIMUM PV PANEL SIZE: 98" LONG x 46" WIDE
ACTUAL PANEL SIZE: 89.7" x 44.6"
- ALL SOLAR PANELS MUST BE INSTALLED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL. PROPERLY TRAINED PERSONNEL SHALL BE:
- FAMILIAR WITH THE DIFFERENCE BETWEEN A DRILL, GUN AND AN IMPACT GUN
- FAMILIAR WITH HOW TO MEASURE THE TORQUE ON THE INSTALLED BOLT
- TRAINED IN INSTALLATION OF STRUCTURAL STEEL BOLTING.
- SPECIAL INSPECTION AND TORQUE TESTING OF PRETENSIONED PANEL FASTENER INSTALLATION SHALL BE PERFORMED BY A QUALIFIED REPRESENTATIVE OF THE LABORATORY OF RECORD (LOR) IN ACCORDANCE WITH SECTION 2.1.8 OF IR PC-7 P² DESIGN CRITERIA FOR CANTILEVERED COLUMN CANOPY STRUCTURES.
- SOLAR PANEL ATTACHMENT BOLTS SHALL BE TESTED AND INSPECTED PER DSA IR 17-8.16 FOR HIGH STRENGTH BOLTS OR AS INSTRUCTED IN CURRENT DSA SPECIFICATIONS.
- THE INSTALLATION TORQUE SHALL BE INSPECTED TO BE IN CONFORMANCE WITH S₅₀₁. THE FREQUENCY OF INSPECTION SHALL BE CONTINUOUS.
- SOLAR PANELS MUST BE SECURED TO THE STRUCTURE WITH A MINIMUM OF 4 DIRECT BOLTS. ALL 4 BOLTS MUST BE PROPERLY INSTALLED, TORQUED, AND INSPECTED FOR ALL PANELS INSTALLED ON A STRUCTURE BY THE END OF THE WORK DAY. NO PANEL MAY BE LEFT ON THE STRUCTURE WITHOUT ALL 4 BOLTS INSTALLED OR PROPERLY TORQUED.
- CONTRACTOR RESPONSIBLE FOR SOLAR PANEL INSTALLATION AND ATTACHMENT SHALL PROVIDE A SUBMITTAL TO THE SITE-SPECIFIC STRUCTURAL ENGINEER OF RECORD FOR THEIR REVIEW CONTAINING: THE PANEL INSTALLATION PROCEDURES, METHOD TO ENSURE ALL PANELS HAVE ALL 4 BOLTS INSTALLED AND PROPERLY TORQUED BEFORE THE END OF EVERY WORK DAY, ALL TOOLS USED TO SECURE THE SOLAR PANEL (INCLUDING BUT NOT LIMITED TO: POWER TOOLS RPM, TOOLS MAX TORQUE ABILITY, METHOD OF ENSURING TORQUE VALUES ARE NOT EXCEEDED, ETC.), AND ALL BOLTS AND HARDWARE USED TO SECURE THE PANEL TO THE STRUCTURE.

DESIGN PARAMETERS CHECKLIST

CODE: 2022 CALIFORNIA BUILDING CODE, REFERRED TO AS "THE CODE"
GOVERNING JURISDICTION: DIVISION OF THE STATE ARCHITECT (DSA)
CONSTRUCTION TYPE: IIB
OCCUPANCY CLASSIFICATION: A-2 E S-2 U
OCCUPANT LOAD FACTOR (CBC TABLE 1004.5):
LOAD FACTOR: 20 & 200
USE AND OCCUPANCY NOTE:

USE AN OCCUPANCY CLASSIFICATION PER CBC CHAPTER 3, OCCUPANT LOAD FACTOR (OLF) PER CBC TABLE 1004.1-2 AND DETERMINATION OF RISK CATEGORY PER CBC TABLE 1604A.5, TO BE COMPLETED BY DESIGN PROFESSIONAL AT TIME OF OTC OR SUBMITTAL.

REGARDLESS OF SIZE, IF A STRUCTURE THAT WOULD OTHERWISE QUALIFY AS RISK CATEGORY II PROVIDES SHELTER FOR EMERGENCY VEHICLES OR EQUIPMENT; OR PROVIDES REQUIRED ACCESS TO, REQUIRED EGGS FROM OR SHARES LIFE SAFETY COMPONENTS WITH A RISK CATEGORY III OR IV BUILDING, THE MORE RESTRICTIVE RISK CATEGORY MUST BE APPLIED. SEE CBC 1604.5.1

RISK CATEGORY: II

ROOF DEAD LOADS:
PV PANEL + MISC: 2.75 PSF MAX.

ROOF LIVE LOADS:
DISTRIBUTED: 12 PSF NON-CONCURRENT w/ PV PANEL DEAD LOAD
POINT LOAD: 300 LBS CONCURRENT w/ PV PANEL DEAD LOAD

NOTE: NO FUTURE ROOF DECKING OR SHEATHING MAY BE INSTALLED ON THE OPEN GRID FRAMING

WIND ANALYSIS: DIRECTIONAL PROCEDURE PER ASCE 7-16, CHAPTER 27

BASIC WIND SPEED: 98 MPH

WIND EXPOSURE: C

GUST EFFECT FACTOR: R = 0.87

INTERNAL PRESSURE COEFFICIENT: C_g = ±0

TOPOGRAPHIC FACTOR: K_{z1} = 1.0

DIRECTIONALITY FACTOR: K_d = 0.85

WIND FLOW: CLEAR AND OBSTRUCTED

SEISMIC CRITERIA:

SITE CLASS: A B C D E

* LIQUEFACtable SOIL AND/OR SITE CLASS F ARE NOT ALLOWED

SEISMIC DESIGN CATEGORY: A B C D E

SEISMIC ANALYSIS: ASCE 7-16 CHAPTER 12 "BUILDING STRUCTURES"

STRUCTURE TYPE: STEEL ORDINARY CANTILEVER COLUMN SYSTEM (OCSS)

RESPONSE MODIFICATION COEFFICIENT: R = 1.25

SYSTEM OVERSTRENGTH FACTOR: D₀ = 1.25

DEFLECTION AMPLIFICATION FACTOR: C_g = 1.25

IMPORTANCE FACTOR: I = 1.00

REDUNDANCY FACTOR: R = 1.5

SEISMIC SEPARATION OF ADJACENT CANOPIES = 9.0" MIN

LOCATION OF BASE = SEE "GEOTECH RECOMMENDATIONS" SECTION

SEISMIC BASE SHEAR COEFFICIENT

C_s = S_{0s}/(R/I) = 0.562 1.2 (STRENGTH w/o ρ)

WHERE S_{0s} IS DETERMINED PER BELOW:

S_{0s} = 0.936 g

S_{0s} = $\frac{3}{5}$ F₀S₀ = 0.702 g 1.0g 1.5g [EQUATIONS 11.4-1 & 11.4-3]

F₀ = 1.125 SHORT PERIOD SITE COEFFICIENT PER TABLE BELOW

DESIGN SPECTRAL ACCELERATION PARAMETER AT SHORT PERIODS [S_{0s}]

SHALL BE DETERMINED IN ACCORDANCE WITH ASCE 7-16 SECTION 11.4.4 AND 11.4.5.

A SITE-SPECIFIC GROUND MOTION HAZARD ANALYSIS IN ACCORDANCE WITH ASCE 7-16 SECTION 21.2 SHALL BE USED TO DETERMINE S_{0s}. DSA DTC SUBMISSION DOES NOT APPLY. CGS APPROVAL REQUIRED.

S_{0s} = g 1.0g 1.5g

WHERE SUCH ANALYSIS IS NOT PROVIDED, S_{0s} MAY BE DETERMINED AS FOLLOWS:

S_{0s} = 0.936 g

S_{0s} = $\frac{3}{5}$ F₀S₀ = 0.702 g 1.0g 1.5g [EQUATIONS 11.4-1 & 11.4-3]

F₀ = 1.125 SHORT PERIOD SITE COEFFICIENT PER TABLE BELOW

SHORT-PERIOD SITE COEFFICIENT, F₀

MAPPED RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE₀) SPECTRAL RESPONSE ACCELERATION PARAMETER AT SHORT PERIOD

SITE CLASS	S ₀ =0.25	S ₀ =0.5	S ₀ =0.75	S ₀ =1.0	S ₀ =1.
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GENERAL STRUCTURAL NOTES (G.S.N.)

GENERAL

- THE STEEL STRUCTURES IN THIS PC ARE PROPRIETARY TO TEICHERT ENERGY & UTILITIES GROUP, INC. DBA TEICHERT SOLAR. THE STEEL PORTION OF ANY CONSTRUCTION PROJECT UTILIZING THIS PC DOCUMENT MAY NOT GO OUT TO BID. FOR CONSTRUCTION COST INFORMATION, CONTACT ANDREAS KARLSSON (562) 283-2970, AKARLSSON@TEICHERT.COM.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION. DO NOT SCALE THE DRAWINGS. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES, IN CASE OF CONFLICT, MORE COSTLY REQUIREMENTS GOVERN FOR BIDDING. SUBMIT CLARIFICATION REQUEST PRIOR TO PROCEEDING WITH WORK.
- ALL DRAWINGS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. STRUCTURAL DRAWINGS INDICATE INFORMATION SUFFICIENT TO CONVEY DESIGN INTENT. IF ERRORS, INCONSISTENCIES OR OMISSIONS ARE DISCOVERED, THE ARCHITECT AND STRUCTURAL ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH WORK. DEVIATION FROM THE APPROVED SET OF CONTRACT DOCUMENTS SHALL ONLY BE MADE AFTER WRITTEN APPROVAL BY THE ENGINEER OF RECORD.
- NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK, UNLESS NOTED OTHERWISE. DETAILS IN STRUCTURAL DRAWINGS ARE TYPICAL AS INDICATED BY CUTS, REFERENCES OR TITLES.
- ALL WORK SHALL CONFORM TO THE MINIMUM STANDARDS OF THE FOLLOWING CODES: LOCAL BUILDING CODE, AND ANY OTHER REGULATING AGENCIES WHICH HAVE AUTHORITY OVER ANY PORTION OF THE WORK, INCLUDING THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY, AND THOSE CODES AND STANDARDS LISTED IN THESE NOTES AND SPECIFICATIONS.
- THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING, FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
- ALL REFERRED STANDARDS (i.e. ACI, AISC, ASTM, ETC.) SHOWN IN THESE DOCUMENTS SHALL BE PER THE LATEST ADOPTED EDITION AS LISTED IN CHAPTER 35 OF THE CODE.
- CONTRACTOR SHALL INVESTIGATE SITE DURING CLEARING AND EARTHWORK OPERATIONS FOR FILLED EXCAVATIONS OR BURIED STRUCTURES, SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, ETC. IF ANY SUCH STRUCTURES ARE FOUND, STRUCTURAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
- CONTRACTOR TO PROVIDE A LIST OF ALL PROPOSED SUBSTITUTIONS, WITH APPLICABLE MANUFACTURER'S ICC/APMO REPORTS, TO ARCHITECT, ENGINEER OF RECORD AND GOVERNING JURISDICTION FOR REVIEW AND APPROVAL BEFORE FABRICATION.

SHOP DRAWINGS / SUBMITTALS

- THE FOLLOWING IS A PARTIAL LIST OF REQUIRED STRUCTURAL SHOP DRAWINGS AND SUBMITTALS. UNLESS SPECIFICALLY INDICATED IN THE TABLE BELOW, ALL SUBMITTALS LISTED REQUIRE REVIEW BY THE ENGINEER OF RECORD.

SUBMITTAL ITEM	REQUIRED FOR SEOR REVIEW
CONCRETE	
CONCRETE MIX DESIGNS, INCLUDING STRENGTH AND SHRINKAGE TEST RESULTS	X
REINFORCING STEEL (EXCEPT WHERE NOTED BELOW)	X
REBAR AT SLAB-ON-GRADE AND SPREAD FOOTINGS	-
FORMWORK	-
SHORING AND BRACING	-
STEEL	
STRUCTURAL STEEL MILL REPORTS	-
STRUCTURAL STEEL	X
WELDING PROCEDURE SPECIFICATIONS	X
MISCELLANEOUS STEEL SHOWN ON STRUCTURAL DRAWINGS	-
COLD-FORMED STEEL	-
COLD-FORMED STEEL FRAMING	X

- GENERAL:
 - THE STRUCTURAL SHOP DRAWING REVIEW IS INTENDED TO HELP THE ENGINEER VERIFY THE DESIGN CONCEPT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK THEIR OWN SHOP DRAWINGS PRIOR TO SUBMITTING TO THE ENGINEER OF RECORD.
 - THE STRUCTURAL SHOP DRAWINGS WILL BE RETURNED FOR RESUBMITTAL IF A CURSORY REVIEW SHOWS MAJOR ERRORS WHICH SHOULD HAVE BEEN FOUND BY THE CONTRACTOR'S CHECKING.
 - ANY SUBMITTAL OF A DETAIL SHEET WITH ADDED INFORMATION NOT SHOWN ON PLANS SHALL BE ACCCOMPANIED BY LOCATION PLAN IDENTIFYING THE MEMBERS INVOLVED AND CLOUDING AROUND ADDED INFORMATION.
 - THE SHOP DRAWINGS SHALL REFERENCE THE DATE OF THE CONSTRUCTION DOCUMENTS THAT THE SHOP DRAWINGS ARE BASED ON AND THE DESIGN CRITERIA USED TO PRODUCE THE SUBMITTAL.
 - CONTRACTOR/SUBCONTRACTOR TO PROVIDE (1) ELECTRONIC COPY OF SHOP DRAWINGS FOR REVIEW BY THE ARCHITECT AND THE ENGINEER OF RECORD.

MEP COORDINATION

- THE STRUCTURAL PLANS INDICATE ONLY THE APPROXIMATE LOCATION OF MECHANICAL, ELECTRICAL AND OTHER EQUIPMENT, AS WELL AS THE RELATED FRAMING NECESSARY TO SUPPORT SUCH EQUIPMENT. THE FINAL POSITIONING OF THESE ITEMS IS DEPENDENT UPON THE EQUIPMENT PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WORK BETWEEN SUBCONTRACTORS AND MANUFACTURERS.

STATEMENT OF STRUCTURAL INSPECTION AND TESTING

- THE FOLLOWING ELEMENTS OF CONSTRUCTION SHALL REQUIRE SPECIAL INSPECTION PER CHAPTER 17 OF THE CODE, U.N.O.
 - SEE DSA FORM 103 FOR REQUIRED SPECIAL INSPECTIONS (SEE S102).
 - THE SPECIAL INSPECTIONS IDENTIFIED ON PLANS ARE, IN ADDITION TO, AND NOT A SUBSTITUTE FOR, THOSE INSPECTIONS REQUIRED TO BE PERFORMED BY THE GOVERNING JURISDICTION. SPECIALLY INSPECTED WORK WHICH IS INSTALLED OR COVERED WITHOUT THE APPROVAL OF AN INSPECTOR FROM THE GOVERNING JURISDICTION IS SUBJECT TO REMOVAL OR EXPOSURE.
 - FOR CONTINUOUS INSPECTION, WHEN WORK IN MORE THAN ONE CATEGORY OF WORK REQUIRING SPECIAL INSPECTION IS TO BE PERFORMED SIMULTANEOUSLY, OR THE GEOGRAPHIC LOCATION OF THE WORK IS SUCH THAT IT CANNOT BE CONTINUOUSLY OBSERVED IN ACCORDANCE WITH THE PROVISIONS OF THE CODE, IT IS THE AGENT'S RESPONSIBILITY TO EMPLOY A SUFFICIENT NUMBER OF INSPECTORS TO ASSURE THAT ALL WORK IS INSPECTED IN ACCORDANCE WITH THOSE PROVISIONS.
 - THE SPECIAL INSPECTORS MUST BE CERTIFIED BY THE GOVERNING JURISDICTION IN THE CATEGORY OF WORK REQUIRED TO HAVE SPECIAL INSPECTION.
 - EXAMINATIONS: 1. SOILS INSPECTIONS BY THE SOILS ENGINEER OF RECORD OR PROJECT INSPECTOR 2. WHEN WAIVED BY THE GOVERNING JURISDICTION
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INFORM THE SPECIAL INSPECTOR OR INSPECTION AGENCY AT LEAST ONE WORKING DAY PRIOR TO PERFORMING ANY WORK THAT REQUIRES SPECIAL INSPECTION. ALL WORK PERFORMED WITHOUT REQUIRED SPECIAL INSPECTION IS SUBJECT TO REMOVAL.
- PROVIDE SPECIAL INSPECTION FOR CONNECTIONS BOLT-S WITH A325 BOLTS. INSPECTIONS SHALL BE DONE PER APPROVED NATIONALLY RECOGNIZED STANDARDS AND THE REQUIREMENTS OF THE CODE AND THE GOVERNING JURISDICTION. WHILE THE WORK IS IN PROGRESS, THE SPECIAL INSPECTOR SHALL DETERMINE THE BOLTS, NUTS, WASHERS AND PAINT; BOLTED PARTS; AND INSTALLATION AND TIGHTENING MEET THE STANDARDS REQUIREMENTS.
- THE SPECIAL INSPECTOR FOR HIGH STRENGTH BOLTED CONNECTIONS SHALL:
 - OBSERVE THE CALIBRATION PROCEDURES WHEN SUCH PROCEDURES ARE REQUIRED BY THE PLANS OR SPECIFICATIONS.
 - MONITOR THE INSTALLATION OF BOLTS TO DETERMINE THAT ALL PLIES OF CONNECTED MATERIALS HAVE BEEN DRAWN TOGETHER.
 - MONITOR THAT THE SELECTED PROCEDURE IS PROPERLY USED TO TIGHTEN ALL BOLTS.
- THE SPECIAL INSPECTOR FOR ADHESIVE ANCHORS SHALL VERIFY THE DRILLING OF ANY HOLES, THE CLEANLINESS OF THE HOLE, THE MOISTURE IN THE HOLE, MIXING THE ADHESIVE, THE BRAND OF ADHESIVE, AND THE PROPER MATERIAL FOR ASSEMBLY.
- THE SPECIAL INSPECTOR SHALL PROVIDE WEEKLY REPORTS AND A FINAL REPORT TO THE STRUCTURAL ENGINEER.
- THE SPECIAL INSPECTOR SHALL ENSURE THAT ALL DEFICIENCIES NOTED BY THE STRUCTURAL ENGINEER IN STRUCTURAL OBSERVATION REPORTS ARE CORRECTED. SUCH COMPLIANCE SHALL BE REFERENCED IN SPECIAL INSPECTOR REPORT.
- THE CONSTRUCTION MATERIALS TESTING LABORATORY MUST BE APPROVED BY THE GOVERNING JURISDICTION, FOR TESTING OF MATERIALS, SYSTEMS, COMPONENTS AND, EQUIPMENTS.
- PERIODIC INSPECTION SHALL OCCUR FREQUENTLY ENOUGH TO INSPECT ALL OF THE INSTALLED ITEMS AND TO PERIODICALLY WITNESS THE INSTALLATION OF THE ITEMS.

FOUNDATION:

- FOUNDATION DESIGN BASED ON SITE SPECIFIC SOILS REPORT. SEE TABLE BELOW FOR SOIL CLASS AND CAPACITIES SCHEDULE.

(FINAL) SOIL CLASS AND CAPACITIES SCHEDULE (NO FURTHER INCREASES ARE ALLOWED)			
ALLOWABLE LATERAL BEARING (PSF/FT)	MAX LATERAL BEARING (PSF)	ALLOWABLE SKIN FRICTION - DOWN (PSF)	ALLOWABLE SKIN FRICTION - UPLIFT (PSF)
ISoil CLASS V	300	4500	250
ISoil CLASS W	400	6000	250
ISoil CLASS X	500	7500	385
XSoil CLASS Y	600	9000	143

THE STRUCTURE HAS BEEN DESIGNED TO ACCOUNT FOR $\frac{1}{2}$ " MOVEMENT AT THE BASE SO THE LATERAL BEARING PRESSURE HAS ALREADY BEEN DOUBLED PER CBC 1806A.3.4

THE PC DESIGN IS BASED ON THE BASIC ASD LOAD COMBINATIONS PER CBC 1605A.3.1. THE ALLOWABLE LATERAL BEARING PRESSURE IS NOT PERMITTED TO BE INCREASED BY ONE-THIRD FOR SHORT-TERM LOADS PER CBC 1806A.1.

PIER DEPTH REQUIRED FOR DOWNWARD AND UPLIFT LOADS SHALL BE BASED ON SKIN FRICTION ONLY. ADDITIONAL RESISTANCE DUE TO END BEARING IS NOT ALLOWED.

- SLABS ON GRADE SHALL BEAR ON APPROVED SUGGRADE PER THE RECOMMENDATIONS OF THE SOILS REPORT.
- CONTRACTORS TO PROVIDE FOR DE-WATERING OF EXCAVATIONS FROM EITHER SURFACE WATER, GROUND WATER, OR SEEPAGE, IF REQUIRED TO AVOID SEEP-OUT WATER FLOW, PER THE APPROVAL OF THE SOILS ENGINEER. ALLOW WATER LEVEL TO ATTAIN ITS NORMAL LEVEL AND PLACE CONCRETE BY THE TREMIE METHOD OR OTHER APPROVED METHOD.
- FOUNDATIONS SHALL BE PLACED AND ESTIMATED ACCORDING TO DEPTHS SHOWN ON DRAWINGS. SHOULD SOIL ENCOUNTERED AT THESE DEPTHS NOT BE APPROVED BY THE INSPECTOR OR SOILS ENGINEER, FOUNDATION ELEVATIONS WILL BE ALTERED.
- FOOTING BACKFILL AND UTILITY TRENCH BACKFILL WITHIN BUILDING AREA SHALL BE MECHANICALLY COMPACTED IN LAYERS IN ACCORDANCE WITH THE SOILS REPORT OR BACKFILLED WITH 2-SACK SAND CEMENT SLURRY AND APPROVED BY THE SPECIAL INSPECTOR. SOILS REPORT SHALL TAKE PRECEDENCE WHEN RECOMMENDATION GIVEN.
- CONTRACTOR SHALL INVESTIGATE SITE DURING CLEARING AND EARTHWORK OPERATIONS FOR FILLED EXCAVATIONS OR BURIED STRUCTURES, SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, ETC. IF ANY SUCH STRUCTURES ARE FOUND, STRUCTURAL ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
- REMOVE CONTAMINATED SOILS (WHERE OCCUR) PER THE SOILS REPORT.
- SOIL REMOVAL AND RECOMPACT SHALL BE PER THE SOILS REPORT AND APPROVED CONTRACT DOCUMENTS.
- EACH DRILLED PIER SHALL BE INSPECTED BY THE SOILS ENGINEER PRIOR TO PLACING CONCRETE AND REINFORCING STEEL.
- PRECAUTIONS SHOULD BE TAKEN DURING THE INSTALLATION OF PIERS TO MINIMIZE THE POSSIBILITY OF CAVING. CLOSELY SPACED PIERS SHOULD BE DRILLED AND FILLED ALTERNATELY, ALLOWING THE CONCRETE TO SET AT LEAST EIGHT HOURS BEFORE DRILLING AN ADJACENT HOLE. PIER EXCAVATIONS SHOULD BE FILLED WITH CONCRETE AS SOON AFTER DRILLING AND INSPECTION AS POSSIBLE.
- PLACE REINFORCING STEEL IN ONE CONTINUOUS UNIT AND ACCURATELY HOLD SECURELY IN FINAL POSITION USING CHARS OR SPACERS DURING CONCRETE PLACEMENT.
- CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF ACI 336.3R, LATEST EDITION.
- OVEREXCAVATING TO ALLOW FOR LOOSE MATERIAL AT THE BOTTOM IS ACCEPTABLE AS LONG AS THE DESIGN DEPTH IS MET.

CONCRETE

- ALL CONCRETE CONSTRUCTION SHALL CONFORM WITH THE CODE AND WITH THE PROVISIONS OF ACI 360 AND ACI 303.
- CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED TESTING LABORATORY AND APPROVED BY THE STRUCTURAL ENGINEER.
 - MIX DESIGN METHODS (TEST HISTORY OR TRIAL BATCH METHOD) PER THE CODE SHALL BE USED TO PROPORTION CONCRETE. SUBMIT MIX DESIGN METHOD DATA.

SCHEDULE OF STRUCTURAL CONCRETE PERFORMANCE REQUIREMENTS:

MEMBER	EXPOSURE CLASS: <input checked="" type="checkbox"/> F0, S0, W0, C0		ALL OTHER CLASSES: <input checked="" type="checkbox"/> EXCLUDING: F3, S3, AND C2		MAX DENSITY (PCF)
	F _c 28 DAY (PSI)	MAX W/C	F _c 28 DAY (PSI)	MAX W/C	
FOUNDATIONS	5000	0.60	5000	0.45	150
EQUIPMENT PADS, AND OTHER MISC. CONCRETE	5000	0.60	5000	0.45	150

4. GEOTECHNICAL ENGINEER SHALL SELECT THE EXPOSURE CLASS FOR EACH SITE.

5. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150, TYPE I OR II FOR EXPOSURE CLASS F0, S0, PO, CO. (TYPE II FOR S1)

6. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150, TYPE V FOR EXPOSURE CLASS S2 AND S3.

7. CONCRETE EXPOSED TO THAW AND FREEZE CYCLES (F1, F2, F3) SHALL BE AIR ENTRAINED PER TABLE 19.3.3.1 OF THE ACI.

8. AGGREGATE FOR HARDROCK CONCRETE SHALL CONFORM TO ALL REQUIREMENTS AND TESTS OF ASTM C33 AND PROJECT SPECIFICATIONS. EXCEPTIONS MAY BE USED ONLY WITH PERMISSION OF THE STRUCTURAL ENGINEER.

9. CONCRETE MIXING OPERATION, ETC. SHALL CONFORM TO ASTM C94.

10. PLACEMENT OF CONCRETE SHALL CONFORM TO ACI 301 AND PROJECT SPECIFICATIONS. CLEAN AND ROUGHEN TO $\frac{1}{4}$ " AMPLITUDE ALL CONCRETE SURFACES OR FLATWORK AGAINST WHICH NEW CONCRETE IS TO BE PLACED EXCEPT AT COLD JOINTS.

11. ALL REINFORCING BARS, ANCHOR BOLTS, AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.

12. SEE DETAIL  FOR PIPE AND CONDUIT IN PIERS.

13. PROVIDE MIN $\frac{1}{4}$ " CHAMFER ON ALL EXPOSED CORNERS UNLESS INDICATED OTHERWISE.

14. THE STRUCTURE MAY BE INSTALLED 24 HOURS AFTER THE FOUNDATIONS HAVE BEEN CAST OR AFTER CONCRETE REACHES A MINIMUM COMPRESSIVE STRENGTH OF 1000-PSI, WHICHEVER COMES FIRST. BREAK TESTS NOT REQUIRED IF WAITING UNTIL 24 HOURS TO ERECT.

15. CONCRETE MAY BE PUMPED, POURED, TAILGATED OR OTHER SUCH METHODS INTO PLACE. CONCRETE SHALL BE ALLOWED TO FREE FALL THE ENTIRE DEPTH OF THE FOUNDATION. PLACEMENT OF ANY FREE-FALL CONCRETE SHALL BE SUCH THAT THE CONCRETE DOES NOT ALTER THE EMBEDMENT DEPTH OF THE CLEARANCE OF THE REINFORCING BAR CAGE OR OTHER EMBEDDED MATERIALS. SEE ACI 304R-09 CHAPTER 5 FOR CONCRETE PLACEMENT STANDARDS.

16. CONCRETE SHRINKAGE CRACKS UP TO $\frac{1}{8}$ " SHALL BE CONSIDERED NON-STRUCTURAL.

REINFORCING STEEL

- REINFORCING BARS SHALL BE DEFORMED BARS AND CONFORM TO THE REQUIREMENTS OF CHAPTER 19A OF THE CODE, ASTM A615, DEFORMED GRADE 60 U.N.O.
- ALL BARS SHALL BE CLEAN OF RUST, GREASE, OR OTHER MATERIALS LIKELY TO IMPAIR BOND. ALL REINFORCING BAR BENDS SHALL BE MADE COLD.

- REINFORCING BAR SPICES SHALL, IN CONCRETE, CONFORM TO THE PROVISIONS OF ACI 318. LAP ALL HORIZONTAL BARS AT CORNERS AND INTERSECTIONS. DOWEL ALL VERTICAL REBAR TO FOUNDATIONS. ALL SPICE LOCATIONS ARE SUBJECT TO APPROVAL BY STRUCTURAL ENGINEER AND DSA.
- ALL BARS SHALL BE MARKED SO THEIR IDENTIFICATION CAN BE MADE WHEN THE FINAL IN-PLACE INSPECTION IS MADE.

- WELDING (WHERE APPROVED BY THE STRUCTURAL ENGINEER AND DSA):
 - ALL WELDS SHALL BE IN CONFORMITY WITH THE PROJECT SPECIFICATIONS AND AWS D1.4. SEE SPECIAL INSPECTION SECTION FOR WELDING INSPECTION REQUIREMENTS.
 - ALL REINFORCING BARS TO BE WELDED SHALL BE ASTM A706, U.N.O.
 - ALL WELDS SHALL BE DONE BY AWS CERTIFIED WELDERS USING THE FOLLOWING ELECTRODES, U.N.O.:

ASTM A706	E80XX
ASTM A615	E90XX

- BARS IN SLABS SHALL BE SECURELY SUPPORTED ON WELL-CURED CONCRETE BLOCKS OR APPROVED METAL CHAIRS, PRIOR TO PLACING CONCRETE.

- REINFORCING STEEL SHALL BE DETAILED IN ACCORDANCE WITH ACI 315.

- REBAR SPACINGS GIVEN ARE MAXIMUM ON CENTER WHETHER STATED AS "O.C." OR NOT. UNLESS A SPECIFIED LENGTH IS GIVEN, ALL REBAR IS CONTINUOUS WHETHER STATED AS "CONT." OR NOT.

- CONTINUOUS INSPECTION OF CONCRETE SHALL INCLUDE INSPECTION DURING INSTALLATION OF REINFORCING STEEL. INSPECTION SHALL BE SCHEDULED SO THAT PLACEMENT OF REINFORCING STEEL, CONDUIT, SLEEVES, AND EMBEDDED ITEMS MAY BE CORRECTED PRIOR TO PLACEMENT OF OVERLYING GridS OF REINFORCING STEEL.

TESTING AND INSPECTION FORM

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS, 2022 CBC
Application Number: School Name: Techert Solar PC
04-121993 School District: Statewide
DSA File Number: Increment Number: Date Created: 2023-05-17 12:15:12

2022 CBC

IMPORTANT: This form is only a summary list of structural tests and some of the special inspections required for the project. Generally, the structural tests and special inspections noted on this form are those that will be performed by the Geotechnical Engineer of Record, Lead Inspector of Record, or Special Inspector. The actual structural test and inspection program will be performed as detailed in the approved construction documents. The project inspector is responsible for conducting final inspection of the project for special inspection or structural testing. The project inspector is responsible for conducting inspection of all facets of construction, including but not limited to, special inspection items listed on this form such as structural, geotechnical, concrete, steel, cold-formed steel framing, anchorages for non-structural components, etc., per Title 24, Part 2, Chapter 17A (2022 CBC).

*NOTE: Undefined section and table references found in this document are from the CBC, or California Building Code.

KEY TO COLUMNS	
1. TYPE	2. PERFORMED BY
Continuous	04 (Geotechnical Engineer) 03 (Inspection) or the special inspection shall be performed by a registered geotechnical engineer or his or her authorized representative.
Periodic	03 (Inspection) or the special inspection shall be performed by a testing laboratory accepted in the DSA laboratory Evaluation Appendix (and of this form) for exemptions.
Test	04 (Project Inspector) or the special inspection may be performed by a project inspector when specifically approved by DSA.
SI	03 (Special Inspection) 02 (Inspection) or the special inspection shall be performed by an appropriately qualified/approved special inspector.

DEPARTMENT OF THE STATE ARCHITECT DEPARTMENT OF GENERAL SERVICES STATE OF CALIFORNIA
DSA 103-22 (Revised 12/01/2022) Page 1 of 22

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (CONCRETE), 2022 CBC
Application Number: School Name: Techert Solar PC
04-121993 School District: Statewide
DSA File Number: Increment Number: Date Created: 2023-05-17 12:15:12

C1. CAST-IN-PLACE CONCRETE	
Test or Special Inspection	Type Performed By Code References and Notes
Periodic	SI Table 1705A.3 Item 5, 1901A.10.
02. b. Identity, sample, and test reinforcing steel.	Test LOR 1901A.2; AC 318-19 Section 26.10 and Section 26.11; DSA 17-10. (See Appendix (and of this form) for exemptions.)
02. c. During concrete placement, fabricate specimens for strength tests, perform slump and content tests, and determine the temperature of the concrete.	Test LOR Table 1705A.3 Item 6; AC 118-19 Sections 26.5 & 26.12.
02. d. Test concrete f/c.	Test LOR 1905A.1; AC 318-19 Section 26.12.
02. e. Batch plant inspection: Eliminated	See Notes SI Default of Containment per 1705A.3.3. If approved by DSA, batch plant inspection may be eliminated by the project inspector when specifically approved by DSA. (See Appendix (and of this form) for exemptions.)
02. f. Welding of reinforcing steel.	Provide special inspection per STEEL Category S/A(6) & (e) and/or S/A(5) & (h) below.
C2. PRESTRESSED / POST-TENSIONED CONCRETE (IN ADDITION TO SECTION C1):	
Test or Special Inspection	Type Performed By Code References and Notes
02. a. Sample and test prestressing tendons and anchors.	Test LOR 1705A.3.4, 1910A.3
02. b. Inspect placement of prestressing tendons.	Periodic SI 1705A.3.4, Table 1705A.3 Items 1 & 9.

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DSA 103-22 (Revised 12/01/2022) Page 2 of 22

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (MASONRY), 2022 CBC
Application Number: School Name: Techert Solar PC
04-121993 School District: Statewide
DSA File Number: Increment Number: Date Created: 2023-05-17 12:15:12

M2. VENEER OR GLASS BLOCK PARTITIONS:	
Test or Special Inspection	Type Performed By Code References and Notes
Periodic	SI TMS 16-16 Table 3 Item 5) and Table 4 Items 1 & 2d.
02. b. Inspect placement of units and construction of mortar joints.	Periodic SI TMS 16-16 Table 4 Item 3b.
02. c. Inspect placement of wire, connectors and anchors.	Periodic SI TMS 16-16 Table 4 Item 2c.
02. d. Inspect type, size and location of anchors and other items to be installed in masonry veneer, including masonry units, mortar, and concrete members.	Periodic SI TMS 16-16 Table 4 Item 3d.
02. e. Inspect dimensions and protection of masonry from cold weather temperature below 40° F.	Periodic SI 1910A.7.1; AC 318-19 Article 13.2.4. If not performed by the project inspector when specifically approved by DSA.
02. f. Test adhesion of veneer bond strength.	Test LOR 1910A.7.1; AC 318-19 Article 13.2.4. If not performed by the project inspector when specifically approved by DSA.
M3. POST-INSTALLED ANCHORS IN MASONRY:	
Test or Special Inspection	Type Performed By Code References and Notes
02. a. Inspect installation of post-installed anchors	See Notes SI 1617A.1, 1910A.4, 1910A.5, Table 1705A.3 Item 4 (Continuation) & 4b. May be performed by the project inspector when specifically approved by DSA. (See Appendix (and of this form) for exemptions.)

DEPARTMENT OF THE STATE ARCHITECT DEPARTMENT OF GENERAL SERVICES STATE OF CALIFORNIA
DSA 103-22 (Revised 12/01/2022) Page 3 of 22

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMINUM), 2022 CBC
Application Number: School Name: Techert Solar PC
04-121993 School District: Statewide
DSA File Number: Increment Number: Date Created: 2023-05-17 12:15:12

S/A. STRUCTURAL STEEL, COLD-FORMED STEEL AND ALUMINUM USED FOR STRUCTURAL PURPOSES	
Test or Special Inspection	Type Performed By Code References and Notes
02. b. Test post installed anchors.	Test LOR 1705A.4, 1910A.5. (See Appendix (and of this form) for exemptions.)
02. c. Verify identification markings and material and physical properties of structural materials that comply with requirements. Minimum types and grades comply with requirements.	Periodic * Table 1705A.4 Item 1b, 2020A.1, AC 360-16 Section A.6, A.8, A.9 & A.10; SI 1905A.2; AC 318-19 Section 26.10; DSA 17-10. (See Appendix (and of this form) for exemptions.)
02. d. Inspect type, size and location of anchors and other items to be installed in masonry veneer, including masonry units, mortar, and concrete members.	Periodic SI TMS 16-16 Table 4 Item 3d.
02. e. Inspect dimensions and protection of masonry from cold weather temperature below 40° F.	Periodic SI TMS 16-16 Table 4 Item 3d. If not performed by the project inspector when specifically approved by DSA.
02. f. Test adhesion of veneer bond strength.	Test LOR 1910A.7.1; AC 318-19 Article 13.2.4. If not performed by the project inspector when specifically approved by DSA.

DEPARTMENT OF THE STATE ARCHITECT DEPARTMENT OF GENERAL SERVICES STATE OF CALIFORNIA
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DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMINUM), 2022 CBC
Application Number: School Name: Techert Solar PC
04-121993 School District: Statewide
DSA File Number: Increment Number: Date Created: 2023-05-17 12:15:12

S/B. SPRAYED INSULATING MATERIALS:	
Test or Special Inspection	Type Performed By Code References and Notes
02. a. Ultrasonic.	Test LOR 1705A.2.1, 1901A.5; AC 318-16, ASC 358-16, ASC 360-16, A51 100-20; RICS 2014 A.9.1.1, A.9.1.2, A.9.1.3, A.9.1.4, A.9.1.8
02. b. Magnetic Particle.	Test LOR 1705A.2.1, 1901A.5; AC 318-16, ASC 360-16; A51 100-20; RICS 2014 A.9.1.1, A.9.1.2, A.9.1.3, A.9.1.4, A.9.1.8
02. c. Test.	Test LOR 1910A.7.1; AC 318-19 Article 13.2.4. If not performed by the project inspector when specifically approved by DSA. (See Appendix (and of this form) for exemptions.)
S/A. STEEL JOISTS AND TRUSSES:	
Test or Special Inspection	Type Performed By Code References and Notes
02. a. Verify size, grade and type for all chord and web members as well as connectors and weld/fillet material. Verify all structural components (e.g. joists, trusses, girders, beams, columns, etc.) are identified and labeled. Verify all welds, lengths and profile; mark or tag each weld.	Periodic SI 1705A.2.3, Table 1705A.2.3; A.9.5; A.9.6; A.9.7; A.9.8; A.9.9; A.9.10; A.9.11; A.9.12; A.9.13; A.9.14; A.9.18

DEPARTMENT OF THE STATE ARCHITECT DEPARTMENT OF GENERAL SERVICES STATE OF CALIFORNIA
DSA 103-22 (Revised 12/01/2022) Page 5 of 22

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SIGNATURE), 2022 CBC
Application Number: School Name: Techert Solar PC
04-121993 School District: Statewide
DSA File Number: Increment Number: Date Created: 2023-05-17 12:15:12

Name of Architect or Engineer in structural responsible charge:
Name of Structural Engineer (if structural design has been delegated):
Signature of Architect or Structural Engineer: Date:

Note: To facilitate DSA electronic mark-ups and identification stamp application, DSA recommends using secured electronic or digital signatures.

DSA STAMP

DEPARTMENT OF THE STATE ARCHITECT DEPARTMENT OF GENERAL SERVICES STATE OF CALIFORNIA
DSA 103-22 (Revised 12/01/2022) Page 6 of 22

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2022 CBC
Application Number: School Name: Techert Solar PC
04-121993 School District: Statewide
DSA File Number: Increment Number: Date Created: 2023-05-17 12:15:12

GEO. 1. GENERAL:	
Test or Special Inspection	Type Performed By Code References and Notes
02. a. Verify that the soil has been prepared properly prior to placement of concrete piles and/or foundation piling. Verify that the soil has been tested to determine the required pile capacity.	Periodic LOR * By geotechnical engineer or his or her qualified representative. (See Appendix (and of this form) for exemptions.)
02. b. Determine capacities of piles and conduct additional tests as required.	Continuous LOR * Under the supervision of the geotechnical engineer.
02. c. Inspect driving operations and maintain complete and accurate records.	Continuous GE* * By geotechnical engineer or his or her qualified representative.
02. d. Verify locations of piles and their embankments, confirm type and size of hammer, record number of hammer blows required for each pile, record locations of penetrations to achieve design capacity, record tip locations and record any pile damage.	Continuous GE* * By geotechnical engineer or his or her qualified representative.
02. e. Steel piles.	Provide tests and inspections per SECTION below.
02. f. Concrete piles and concrete piles.	Provide tests and inspections per CONCRETE section below.
02. g. For specialty piles, perform additional inspections as determined by the registered design professional in his or her professional judgment.	* * As defined on drawings or specifications.
02. h. Compaction testing.	Test LOR* * Under the supervision of the geotechnical engineer.

DEPARTMENT OF THE STATE ARCHITECT DEPARTMENT OF GENERAL SERVICES STATE OF CALIFORNIA
DSA 103-22 (Revised 12/01/2022) Page 7 of 22

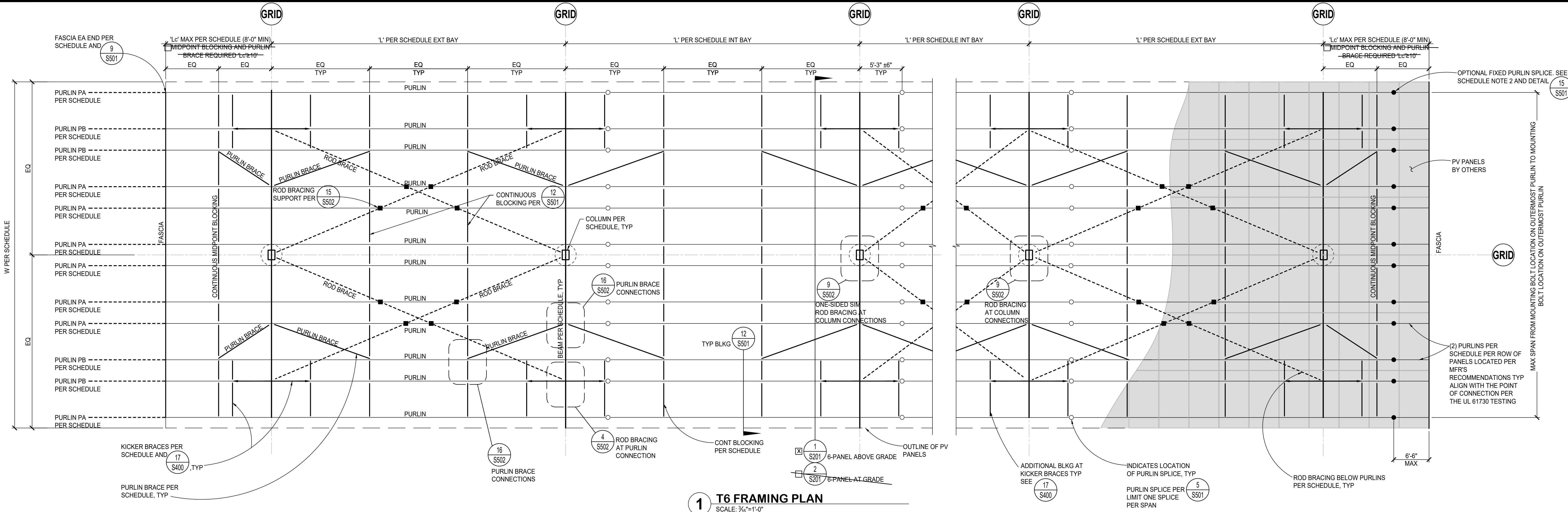
DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2022 CBC
Application Number: School Name: Techert Solar PC
04-121993 School District: Statewide
DSA File Number: Increment Number: Date Created: 2023-05-17 12:15:12

GEO. 2. PERIODIC:	
Test or Special Inspection	Type Performed By Code References and Notes
02. a. Verify that the soil has been prepared properly prior to placement of concrete piles and/or foundation piling. Verify that the soil has been tested to determine the required pile capacity.	Periodic LOR * By geotechnical engineer or his or her qualified representative. (See Appendix (and of this form) for exemptions.)
02. b. Determine capacities of piles and conduct additional tests as required.	Continuous LOR * Under the supervision of the geotechnical engineer.
02. c. Inspect driving operations and maintain complete and accurate records.	Continuous GE* * By geotechnical engineer or his or her qualified representative.
02. d. Verify locations of piles and their embankments, confirm type and size of hammer, record number of hammer blows required for each pile, record locations of penetrations to achieve design capacity, record tip locations and record any pile damage.	Continuous GE* * By geotechnical engineer or his or her qualified representative.
02. e. Steel piles.	Provide tests and inspections per SECTION below.
02. f. Concrete piles and concrete piles.	Provide tests and inspections per CONCRETE section below.
02. g. For specialty piles, perform additional inspections as determined by the registered design professional in his or her professional judgment.	* * As defined on drawings or specifications.
02. h. Compaction testing.	Test LOR* * Under the supervision of the geotechnical engineer.

DEPARTMENT OF THE STATE ARCHITECT DEPARTMENT OF GENERAL SERVICES STATE OF CALIFORNIA
DSA 103-22 (Revised 12/01/2022) Page 8 of 22

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2022 CBC
Application Number: School Name: Techert Solar PC
04-121993 School District: Statewide
DSA File Number: Increment Number: Date Created: 2023-05-17 12:15:12

GEO. 3. DURING DRIVING:	



1 T6 FRAMING PLAN

SCALE: $\frac{3}{16}$ "=1'-0"

10
DESIGN
(SEE
NOTE 3)

SCHEDULE NOTES:

1. ~~COLUMN SPACING IS LESS THAN 25' 0", MID POINT BLOCKING IS ACCEPTABLE IN LIEU OF THIRD POINT BLOCKING. MIN COL SPACING IS 22' 0", TYP. MAX CANTILEVER SPAN FOR MINIMUM COLUMN SPACING IS PER SCHEDULE.~~

2. WHERE (2) COLUMN CONFIGURATION FOR A SINGLE ARRAY OCCURS, PURLINS SHALL BE UNSPLICED AND CONTINUOUS. FOR TOTAL PURLIN LENGTHS GREATER THAN 62' 0" WITH A (2) COLUMN CONFIGURATION, A FIXED PURLIN SPLICER PER 15 MAY BE USED (MAX (1) PER PURLIN).

S501

4. SEE SECTION DETAILS LISTED FOR DEFINITIONS OF "H3" AND "H1"

5. COLUMNS BETWEEN SEPARATE CANOPIES SHALL BE SPACED TO AVOID DRILLED PIER GROUP EFFECTS (FOR BOTH SKIN FRICTION AND LATERAL BEARING). SEE SEPARATION DIMENSION PER GEOTECH RECOMMENDATIONS SECTION ON S100.

DIMENSION PER GEOTECH RECOMMENDATIONS SECTION ON S100.

For more information, visit www.ams.org.

07.kpff_san diego\01.cad\ksd_333_2200358_teichert dsa\06_communication\from_pinnacle\2023\07-jul\07-24-2023\cad\s200.dwg 05/Dec/22

2 MEMBER SCHEDULE

Digitized by srujanika@gmail.com

10.1007/s00332-010-9000-0

SYMBOLS LEGEND:

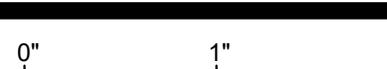
- ROD BRACE SUPPORTS PER 
- PURFLIN SPLICING PER 
- FIXED PURFLIN SPLICING PER 

ARRAY ID LEGEND

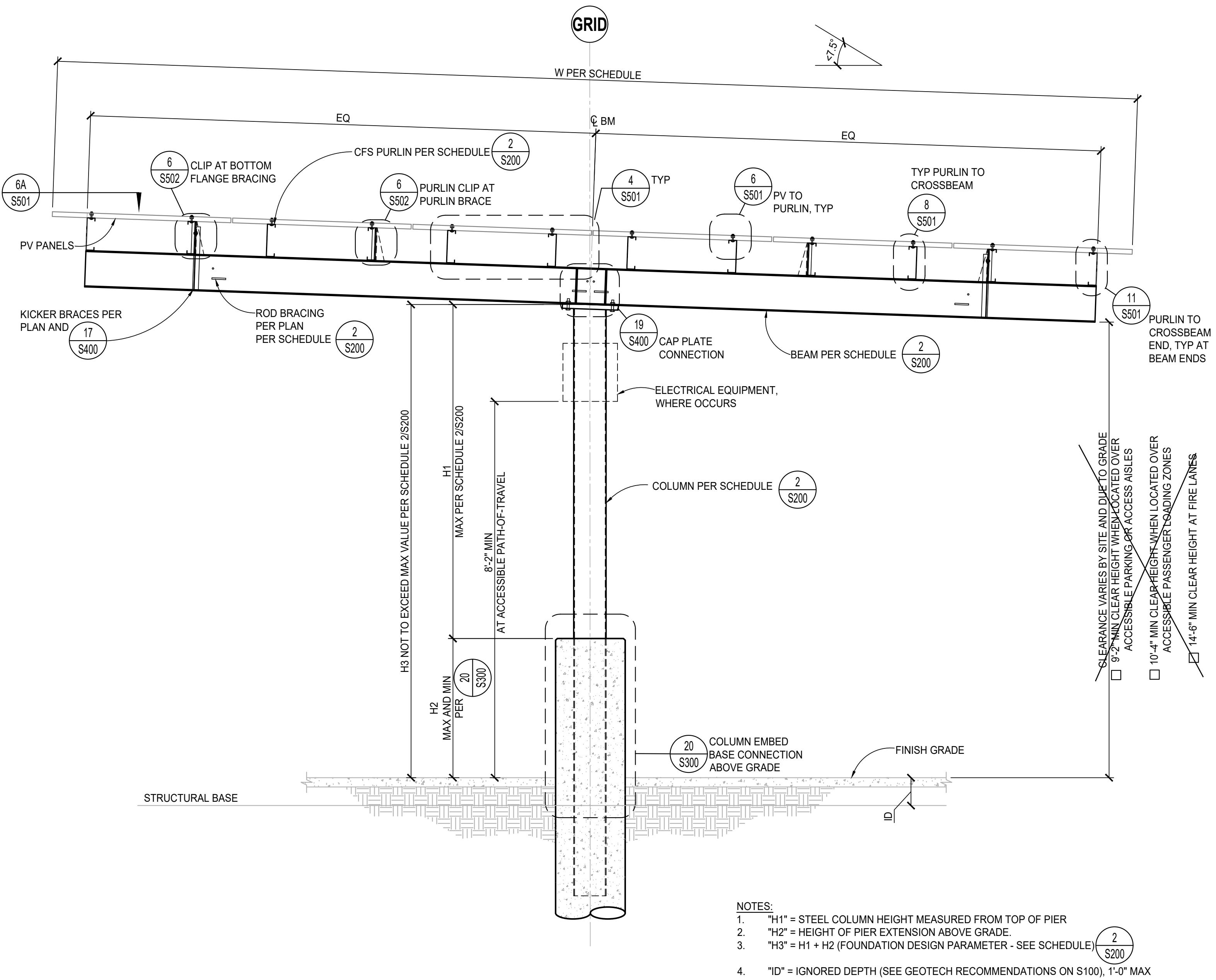
ARRAY ID LEGEND

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    graph TD
      Root["T6 - AS - 1.0"] --> MaxDS["MAX S_DS"]
      Root --> Shorter["S - SHORTER OPTION"]
      Root --> Taller["T - TALLER OPTION"]
      Shorter --> A["A - 2 COL MIN (NO MAX)"]
      Shorter --> B["B - 3 COL MIN (NO MAX)"]
      Taller --> C["C - 2 COL (FIXED)"]
  
```

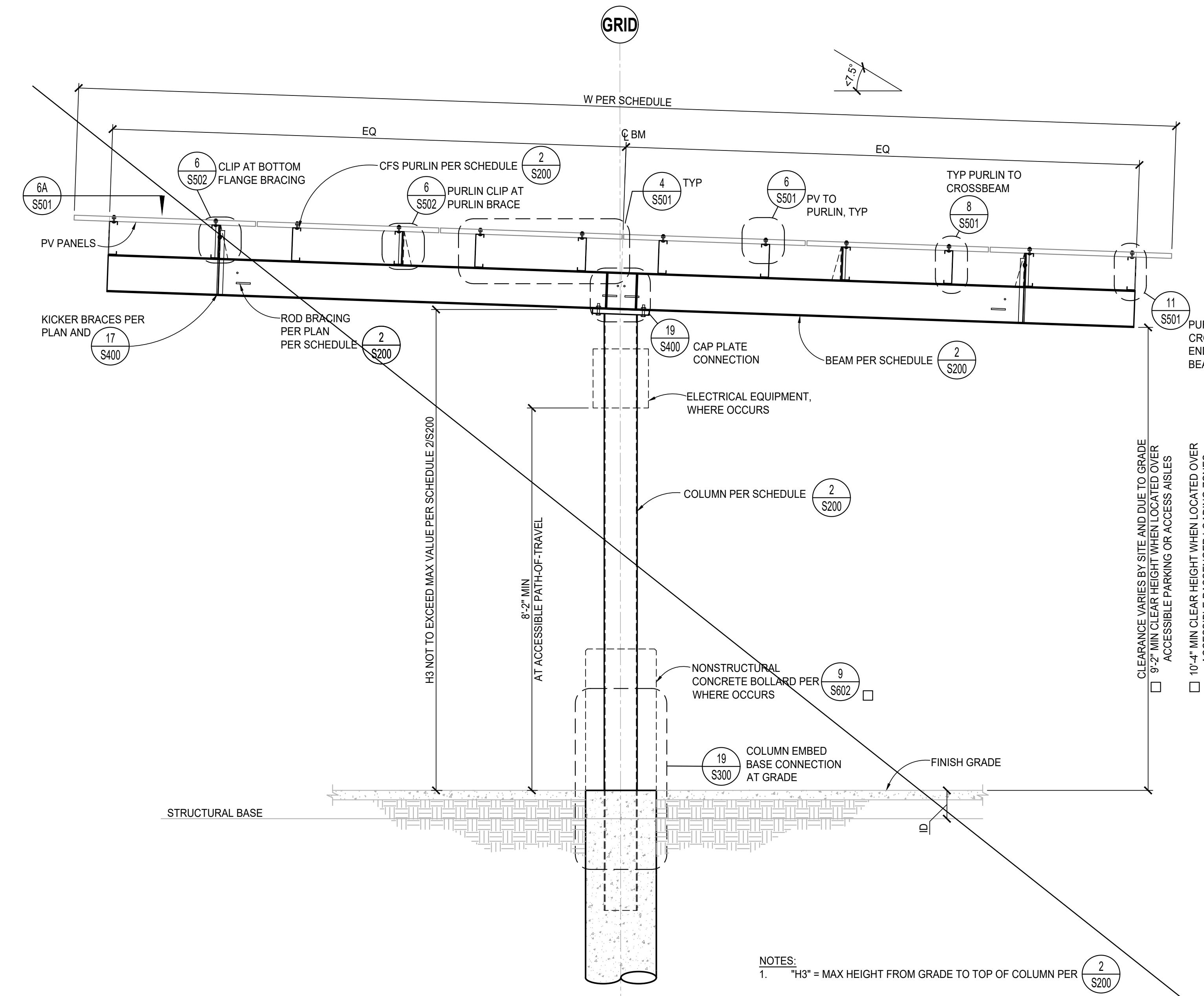
DATE	07/21/20
DRAWN BY	
 <p>A horizontal scale bar with markings at 0", 1", and 2". The first marking is at the left end of the bar. The second marking is at the midpoint of the bar. The third marking is at the right end of the bar.</p>	
ORIGINAL SHEET SIZE 30 x 42 IF BAR IS NOT TO SCALE - DRAWING IS NOT TO SCALE	
SHEET	S200

3200



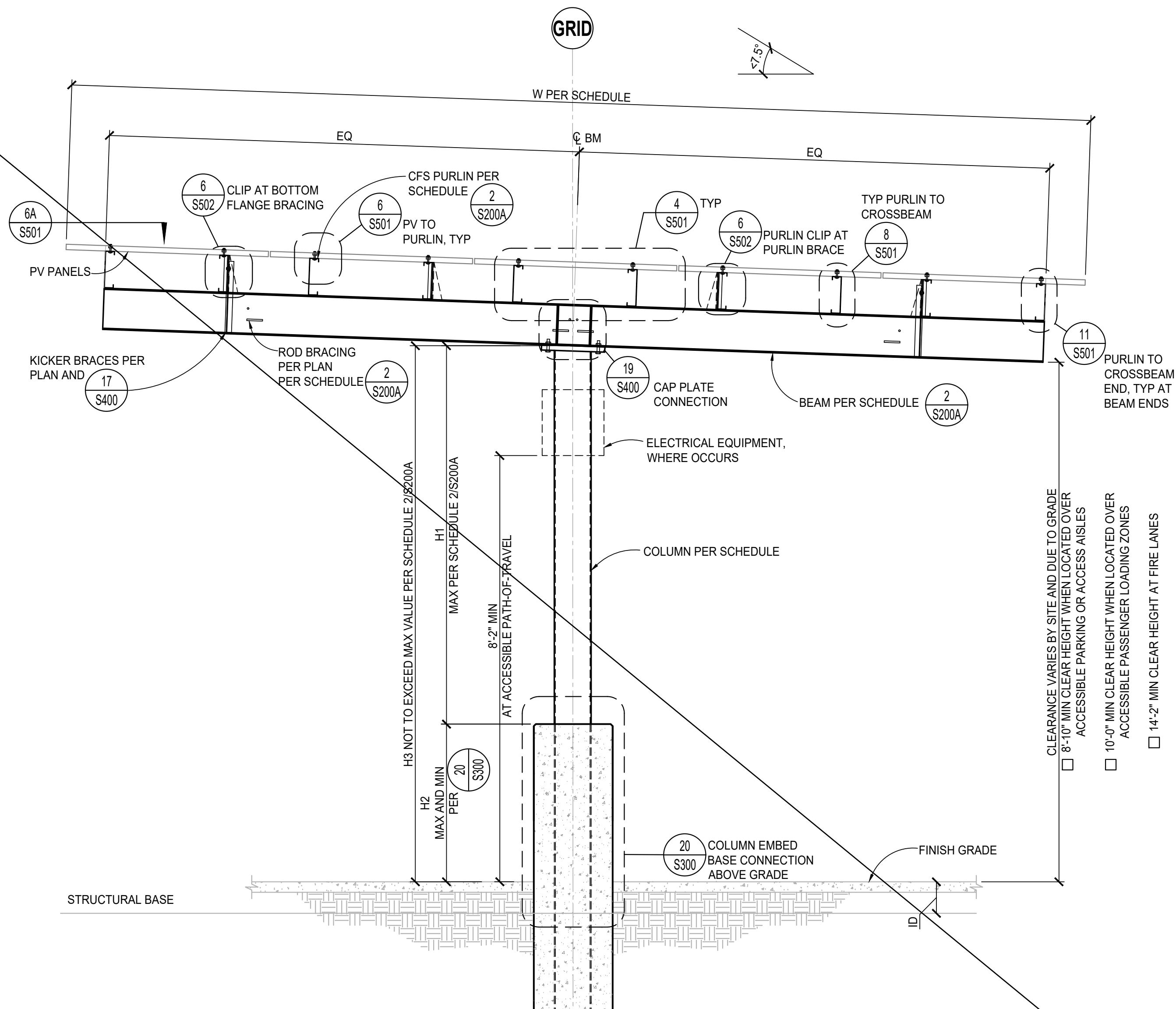
1 TYPICAL 6 PANEL T-STRUCTURE SECTION (ABOVE-GRADE OPTION)

SCALE: $\frac{1}{8}$ "=1'-0"



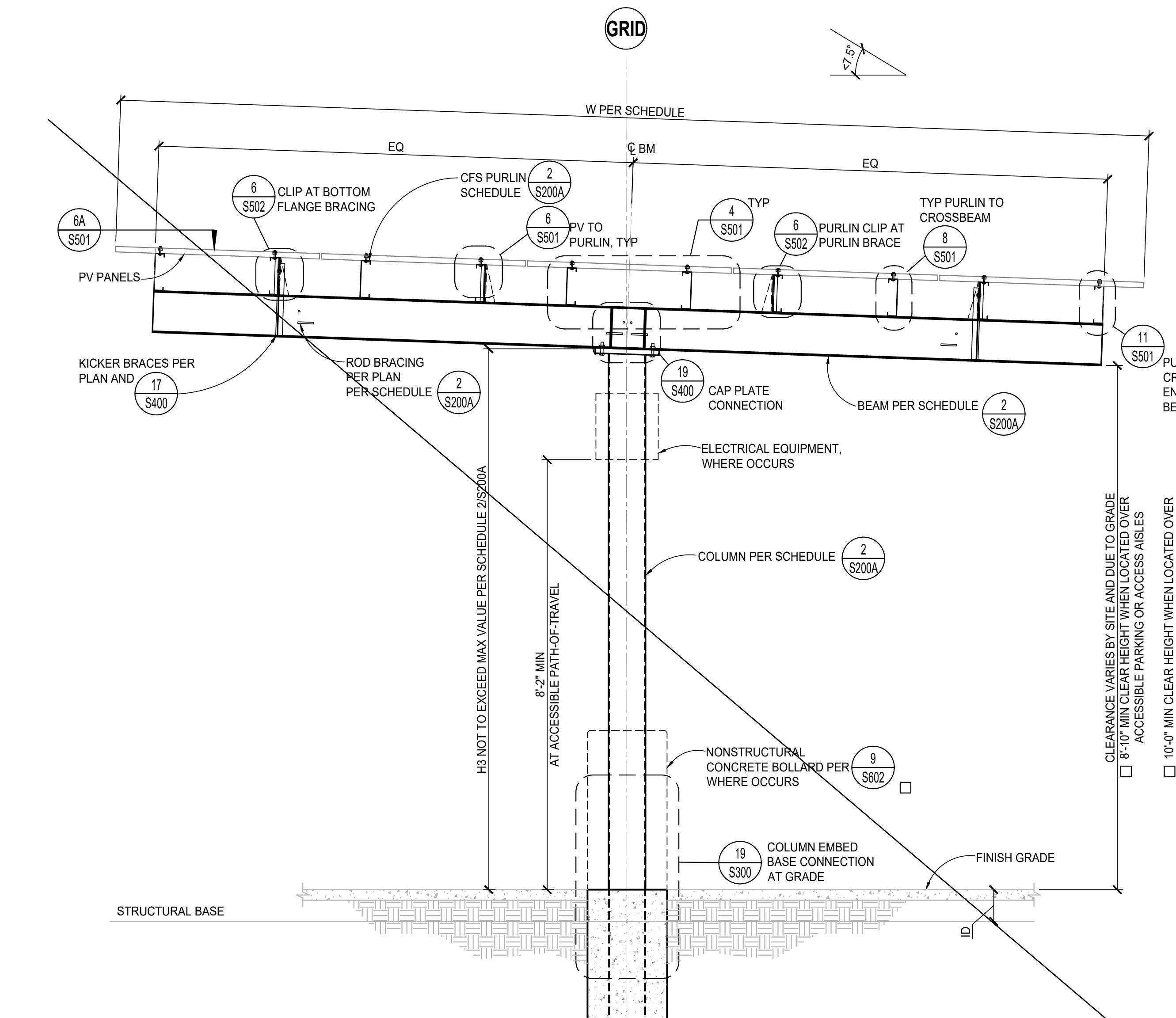
2 TYPICAL 6 PANEL T-STRUCTURE SECTION (AT-GRADE OPTION)

SCALE: $\frac{1}{8}$ "=1'-0"



3 TYPICAL 5 PANEL T-STRUCTURE SECTION (ABOVE-GRADE OPTION)

SCALE: $\frac{1}{8}$ "=1'-0"

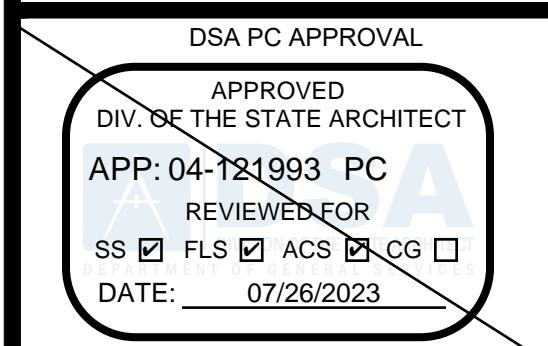


4 TYPICAL 5 PANEL T-STRUCTURE SECTION (AT-GRADE OPTION)

SCALE: $\frac{1}{8}$ "=1'-0"



3131 Camino Del Rio North, Suite 1080
San Diego, California 92108
(619) 521-8500 Fax (619) 521-8591
www.kpff.com kpff project #2200358

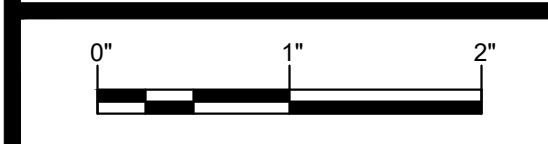


TEICHERT / KPFF
DSA - PC PV STRUCTURE SYSTEM

REVISION SCHEDULE	
Design No.	Description
0	FLAT REVIEW SUBMITTAL
1	CB 02/14/2023 JM SN
2	CB 05/23/2023 JM SN
3	VS SUBMITTAL
4	VS 07/11/2023 JM SN
5	VS SUBMITTAL
6	VS 07/21/2023 JM SN

DATE 07/21/2023

DRAWN BY JM

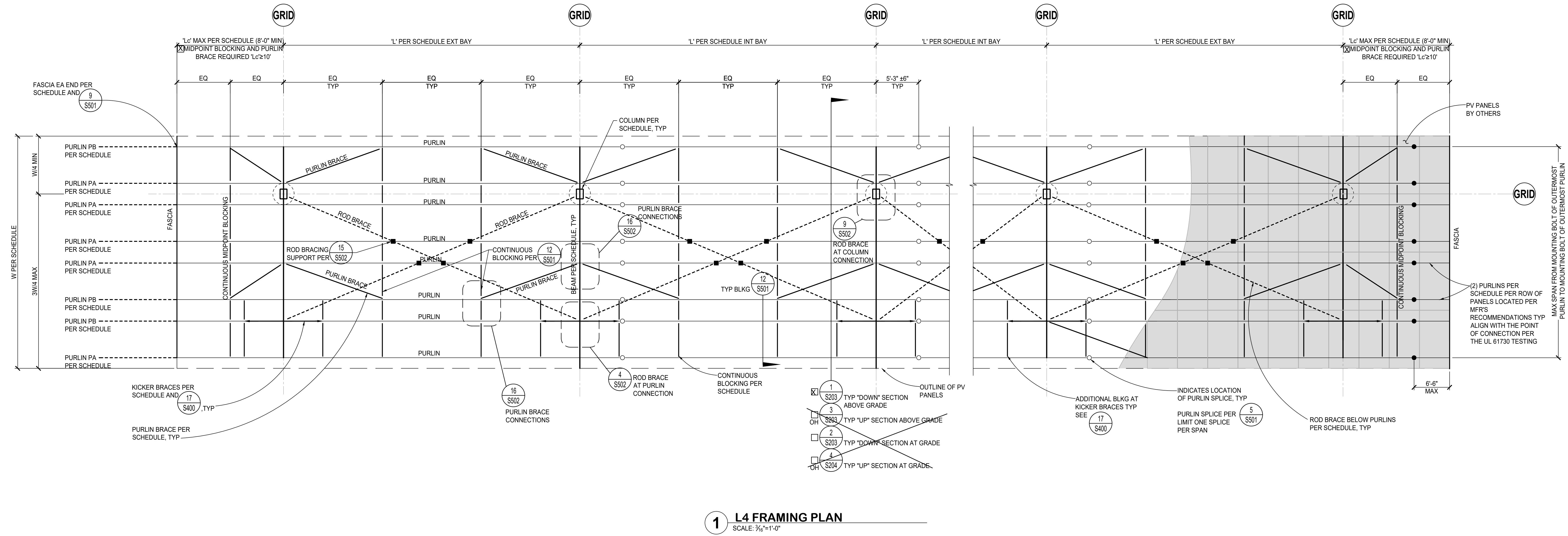


ORIGINAL SHEET SIZE 30 x 42

IF BAR IS NOT TO SCALE - DRAWING IS NOT TO SCALE

SHEET

S201



L4 DESIGN (SEE NOTE 3)

S _{ds} ≤ 1.00g												
ARRAY ID	# OF COLUMN	MAX STRUCTURE WIDTH "W"	MAX COLUMN SPACING "L" (SEE NOTE 1)	HSS COLUMN	WF BEAM	BASE CONNECTION OPTION, HEIGHT PARAMETERS (SEE NOTE 4), AND SECTION DETAIL						
□ L4U-AS-1.0 □ L4D-AS-1.0	2+ COLUMN (NOTE 2) (2 COL MIN, NO MAX)	31'-0"	37'-9"	HSS14x10½	W14x43	ABOVE GRADE, H3 ≤ 14'-0", H1 ≤ 10'-0", DETAIL 1 OR 3 □ AT-GRADE, H3 ≤ 14'-0", DETAIL 2 OR 4 □ AT-GRADE, H3 ≤ 15'-0", DETAIL 2 OR 4 □ ABOVE-GRADE, H3 ≤ 18'-0", H1 ≤ 15'-0", DETAIL 1 OR 3	PURLIN PURLIN PA: □ 12x4½x1½x14GA OR □ 12x4x1x14GA PURLIN PB: 12x4½x1½x14GA PROVIDE THIRD POINT BLOCKING (SEE NOTE 1 FOR EXCEPTION)	MAX PURLIN CANTILEVER L _c 13'-2"	CONTINUOUS BLOCKING 9x2.5x1x16GA	PURLIN BRACE 9x4x1x14 GA	ROD BRACE CONDITION EVERY BAY	FASCIA 12x1.5 14 GA TRACK
□ L4U-AT-1.0 □ L4D-AT-1.0	2+ COLUMN (NOTE 2) (2 COL MIN, NO MAX)	31'-0"	37'-9"	HSS14x10½	W14x43	□ AT-GRADE, H3 ≤ 14'-0", DETAIL 2 OR 4 □ AT-GRADE, H3 ≤ 15'-0", DETAIL 2 OR 4 □ ABOVE-GRADE, H3 ≤ 18'-0", H1 ≤ 15'-0", DETAIL 1 OR 3	PURLIN PURLIN PA: □ 12x4½x1½x14GA OR □ 12x4x1x14GA PURLIN PB: 12x4½x1½x14GA PROVIDE THIRD POINT BLOCKING (SEE NOTE 1 FOR EXCEPTION)	13'-2"	9x2.5x1x16GA	9x4x1x14 GA	EVERY BAY	12x1.5 14 GA TRACK
□ S _{ds} ≤ 1.50g												
□ L4U-AS-1.5 □ L4D-AS-1.5	2+ COLUMN (NOTE 2) (2 COL MIN, NO MAX)	31'-0"	37'-9"	HSS14x10½	W14x43	ABOVE GRADE, H3 ≤ 14'-0", H1 ≤ 10'-0", DETAIL 2 OR 4 □ AT-GRADE, H3 ≤ 14'-0", DETAIL 2 OR 4 □ AT-GRADE, H3 ≤ 15'-0", DETAIL 2 OR 4 □ ABOVE-GRADE, H3 ≤ 18'-0", H1 ≤ 15'-0", DETAIL 1 OR 3	PURLIN PURLIN PA: □ 12x4½x1½x14GA OR □ 12x4x1x14GA PURLIN PB: 12x4½x1½x14GA PROVIDE THIRD POINT BLOCKING (SEE NOTE 1 FOR EXCEPTION)	13'-2"	9x2.5x1x16GA	9x4x1x14 GA	EVERY BAY	12x1.5 14 GA TRACK
□ L4U-AT-1.5 □ L4D-AT-1.5	2+ COLUMN (NOTE 2) (2 COL MIN, NO MAX)	31'-0"	37'-9"	HSS14x10½	W14x43	□ AT-GRADE, H3 ≤ 14'-0", DETAIL 2 OR 4 □ AT-GRADE, H3 ≤ 15'-0", DETAIL 2 OR 4 □ ABOVE-GRADE, H3 ≤ 18'-0", H1 ≤ 15'-0", DETAIL 1 OR 3	PURLIN PURLIN PA: □ 12x4½x1½x14GA OR □ 12x4x1x14GA PURLIN PB: 12x4½x1½x14GA PROVIDE THIRD POINT BLOCKING (SEE NOTE 1 FOR EXCEPTION)	13'-2"	9x2.5x1x16GA	9x4x1x14 GA	EVERY BAY	12x1.5 14 GA TRACK

SCHEDULE NOTES:

1. COLUMN SPACING IS LESS THAN 25'-0", MID-POINT BLOCKING IS ACCEPTABLE IN LIEU OF THIRD POINT BLOCKING. MIN COL SPACING IS 20'-0", TYP. MAX CANTILEVER SPAN FOR MINIMUM COLUMN SPACING IS PER SCHEDULE.

2. WHERE (2) COLUMN CONFIGURATION FOR A SINGLE ARRAY OCCURS, PURLINS SHALL BE UNSPLICED AND CONTINUOUS. FOR TOTAL PURLIN LENGTHS GREATER THAN 62'-0" WITH A (2) COLUMN CONFIGURATION, A FIXED PURLIN SPLICE PER 15 MAY BE USED (MAX 1) PER PURLIN.

3. THE MAXIMUM NUMBER OF PANEL ROWS IS (4), BUT FEWER PANEL ROWS MAY BE USED. THE MAXIMUM NUMBER OF PANEL ROWS IS □ 4 OR □ 3.

4. SEE SECTION DETAILS LISTED FOR DEFINITIONS OF "H3" AND "H1".

5. COLUMNS BETWEEN SEPARATE CANOPIES SHALL BE SPACED TO AVOID DRILLED PIER GROUP EFFECTS (FOR BOTH SKIN FRICTION AND LATERAL BEARING). SEE SEPARATION DIMENSION PER GEOTECH RECOMMENDATIONS SECTION ON S100.

SYMBOLS LEGEND:

- ROD BRACE SUPPORTS PER 15
- PURLIN SPLICE PER 5
- FIXED PURLIN SPLICE PER 15

TEICHERT / kpff
DSA - PC PV STRUCTURE SYSTEM

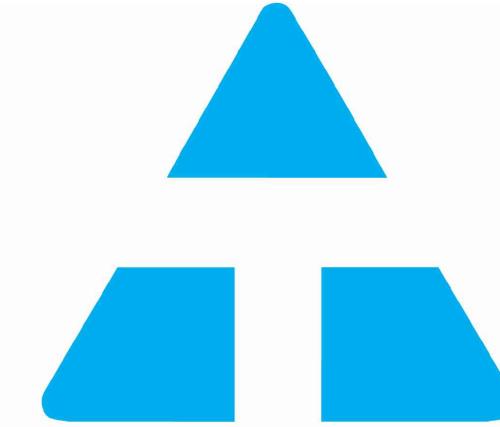
4 PANEL L-STRUCTURE
FRAMING PLAN AND SCHEDULE

ARRAY ID LEGEND

- T6 - AS - 1.0
- MAX S_{ds}
- S - SHORTER OPTION
- T - TALLER OPTION
- A - 2 COL MIN (NO MAX)
- B - 3 COL MIN (NO MAX)
- C - 2 COL (FIXED)
- CANOPY TYPE

REVISION SCHEDULE	Date	Design No.	Description	Date	Design No.	Description
FLA/REVIEW SUBMITTAL	02/14/2023	JM	CB	02/14/2023	JM	SN
V2 SUBMITTAL	05/23/2023	JM	SN	05/23/2023	JM	SN
V3 SUBMITTAL	07/11/2023	JM	SN	07/11/2023	JM	SN
V4 SUBMITTAL	07/21/2023	JM	SN	07/21/2023	JM	SN

DATE 07/21/2023
DRAWN BY JM
0" 1" 2"
ORIGINAL SHEET SIZE 30 x 42
IF BAR IS NOT TO SCALE - DRAWING IS NOT TO SCALE
SHEET S202



TEICHERT SOLAR

kpff

3131 Camino Del Rio North, Suite 1080
San Diego, California 92108
(619) 521-8500 Fax (619) 521-8591
www.kpff.com kpff project #220035a

A circular stamp with a double-line border. The outer ring contains the text "REGISTERED PROFESSIONAL ENGINEER" at the top and "STRUCTURAL STATE OF CALIFORNIA" at the bottom, separated by stars. The inner circle contains "SHANE NOEL" at the top and "No. S4800" at the bottom. A blue signature "Shane Noel" is written across the top of the stamp.

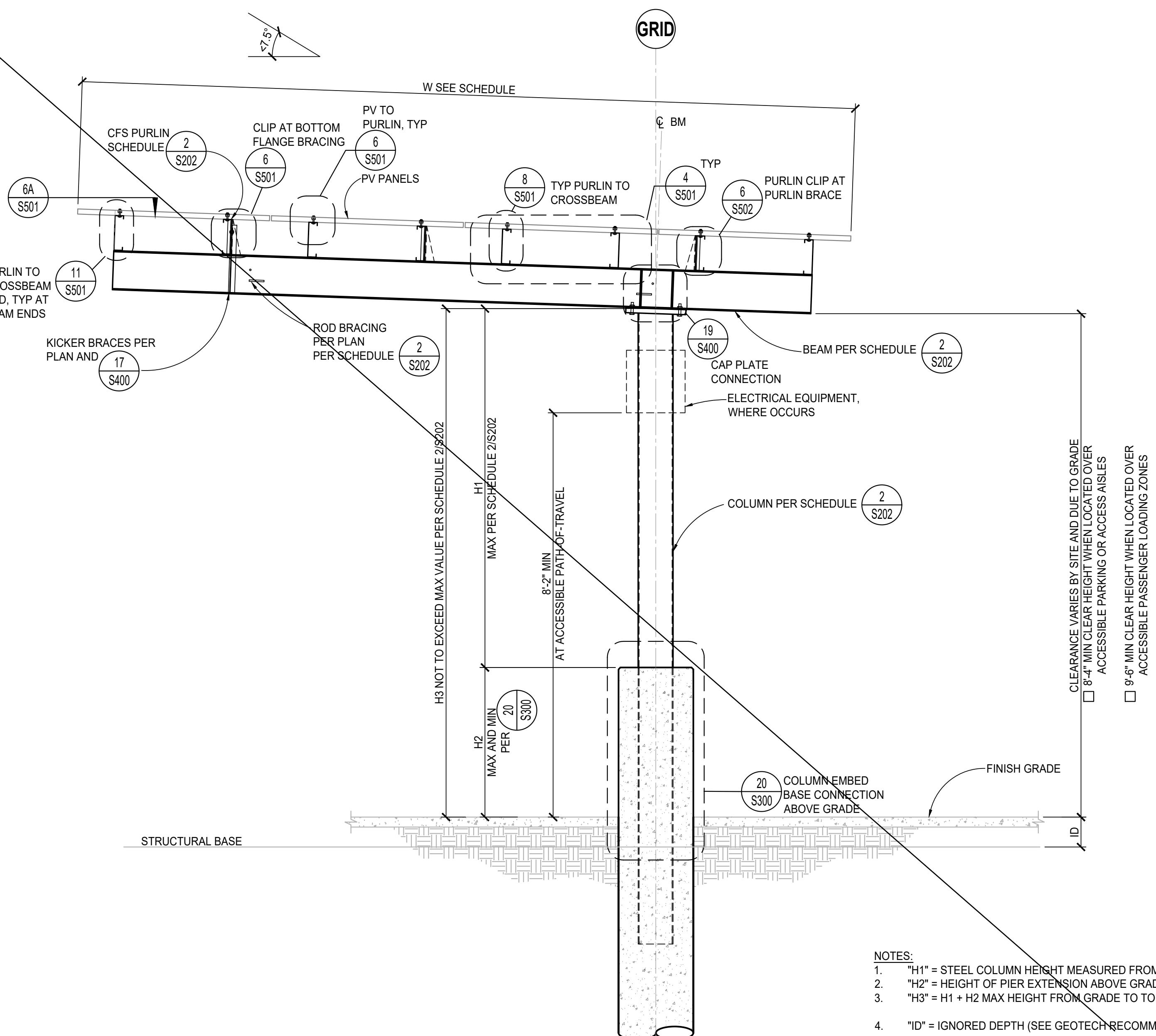
DSA PC APPROVAL	
APPROVED	
DIV. OF THE STATE ARCHITECT	
APP: 04-121993 PC	
REVIEWED FOR	
SS	<input checked="" type="checkbox"/> FLS <input checked="" type="checkbox"/> ACS <input checked="" type="checkbox"/> CG <input type="checkbox"/>
DEPARTMENT OF GENERAL SERVICES	
DATE:	07/26/2023

TEICHERT / KPFF SA - PC PV STRUCTURE SYSTEM PANEL L-STRUCTURE SECTIONS

DATE	07/21/20
DRAWN BY	
<hr/>  <p>A horizontal scale bar with markings at 0", 1", and 2". The first marking is a short black line with a vertical dimension line above it. The second marking is a longer black line with a vertical dimension line above it. The third marking is a very long black line extending across the entire width of the bar.</p>	
ORIGINAL SHEET SIZE 30 x 42	
IF BAR IS NOT TO SCALE - DRAWING IS NOT TO SCALE	
SHEET	8000

1 TYPICAL 4 PANEL L-STRUCTURE "DOWN" SECTION (ABOVE-GRADE OPTION)

SCALE: $\frac{3}{8}''=1'-0''$

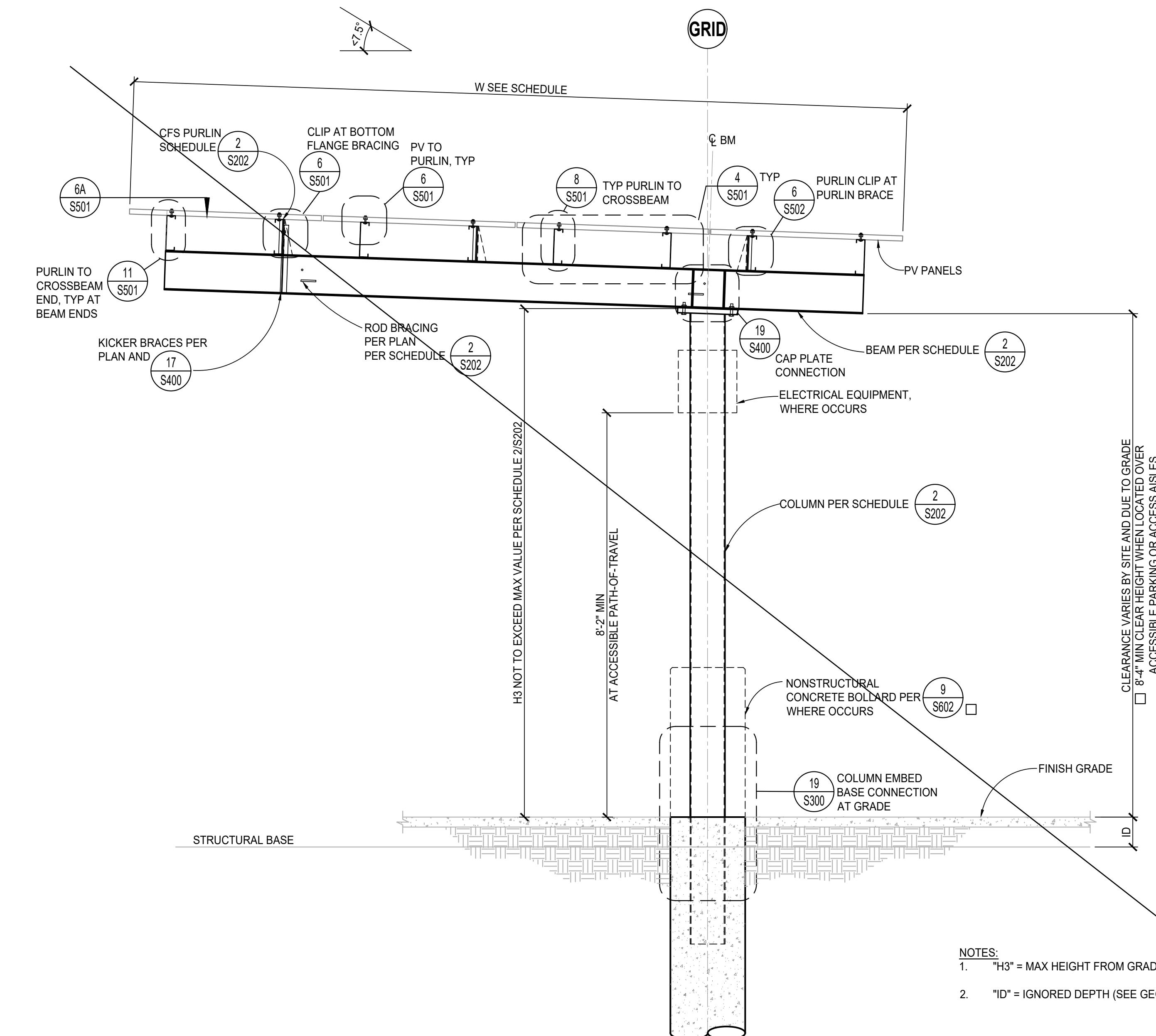


3 TYPICAL 4 PANEL L-STRUCTURE "UP" SECTION (ABOVE-GRADE OPTION)

3 SCALE: $\frac{3}{8}$ "=1'-0"

2 TYPICAL 4 PANEL L-STRUCTURE "DOWN" SECTION (AT-GRADE OPTION)

SCALE: $\frac{3}{8}$ "=1'

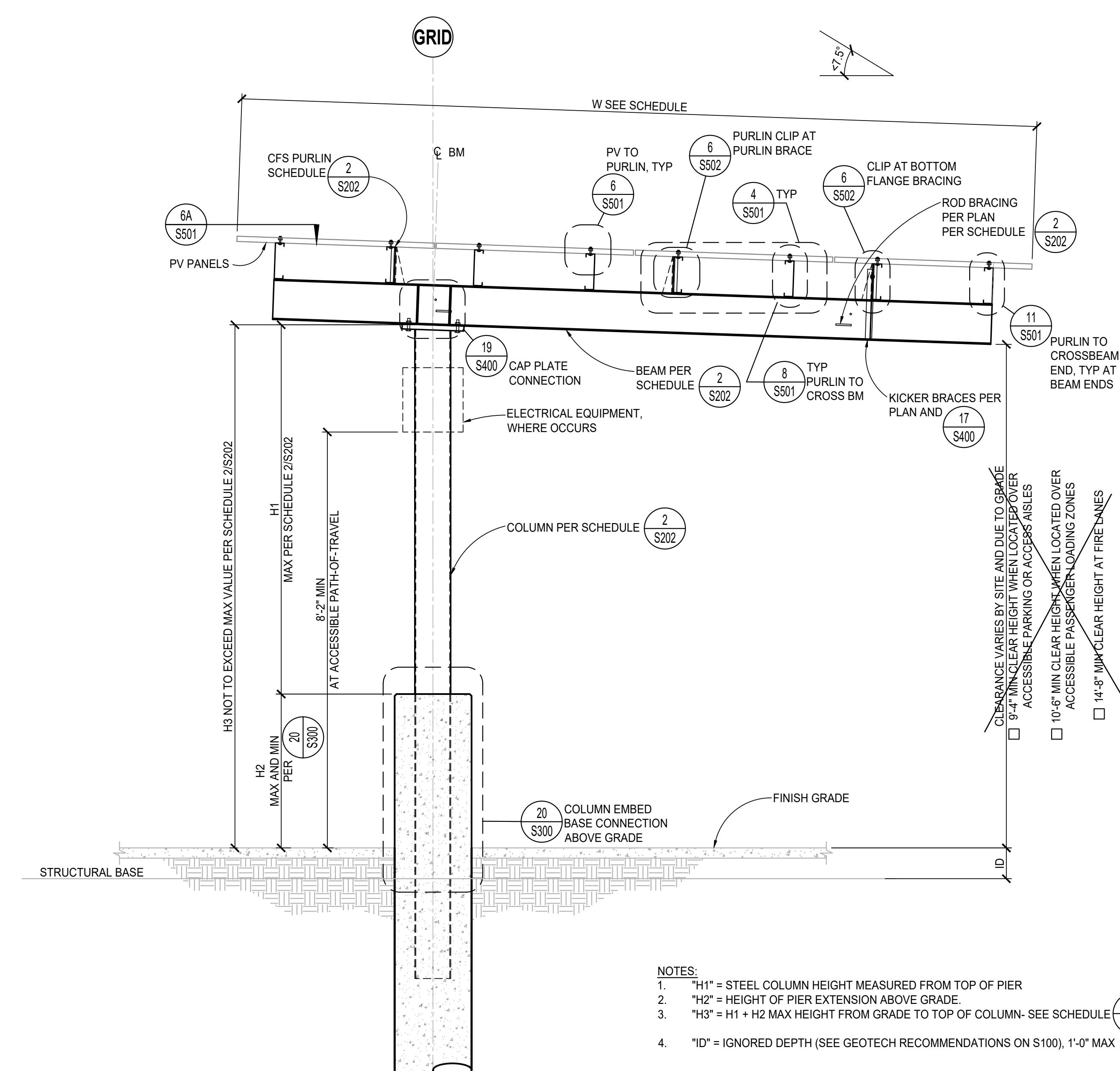


1 TYPICAL 4 PANEL L-STRUCTURE "UP" SECTION (AT-GRADE OPTION) □

4 SCALE: $\frac{3}{8}$ " = 1'

2 TYPICAL 4 PANEL L-STRUCTURE "UP" SECTION (ABOVE-GRADE OPTION)

3 SCALE: $\frac{3}{8}$ "=1'-0"



NOTES:

1. "H1" = STEEL COLUMN HEIGHT MEASURED FROM TOP OF PIER
2. "H2" = HEIGHT OF PIER EXTENSION ABOVE GRADE.
3. "H3" = H1 + H2 MAX HEIGHT FROM GRADE TO TOP OF COLUMN- SEE SCHEDULE
4. "ID" = IGNORED DEPTH (SEE GEOTECH RECOMMENDATIONS ON S100), 1'-0" MAX

2
S202

This technical diagram illustrates a cross-section of a building's structural frame, specifically the roof and upper levels. The diagram shows a grid system with a vertical column labeled 'GRID' and a horizontal line labeled 'W SEE SCHEDULE'. The structure includes a 'STRUCTURAL BASE' at the bottom, a 'CFS PURLIN SCHEDULE' (2 S202) at the top, and various beams and columns in between. Key components labeled include:

- PV PANELS** (PV TO PURLIN, TYP)
- CAP PLATE CONNECTION** (19 S400)
- ELECTRICAL EQUIPMENT, WHERE OCCURS**
- COLUMN PER SCHEDULE** (2 S202)
- NONSTRUCTURAL CONCRETE BOLLARD PER** (9 S602)
- COLUMN EMBED BASE CONNECTION AT GRADE** (19 S300)
- FINISH GRADE**
- STRUCTURAL BASE**
- 7.5°** (angle of a slope)
- W SEE SCHEDULE**
- CLEARANCE VARIES BY SITE AND DUE TO GRADE**
- 9'-4" MIN CLEAR HEIGHT WHEN LOCATED OVER ACCESSIBLE PARKING OR ACCESS AISLES**
- 10'-6" MIN CLEAR HEIGHT WHEN LOCATED OVER ACCESSIBLE PASSENGER LOADING ZONES**
- 14'-8" MIN CLEAR HEIGHT AT FIRE LANES**

NOTES:

1. "H3" = MAX HEIGHT FROM GRADE TO TOP OF COLUMN PER SCHEDULE
2. "ID" = IGNORED DEPTH (SEE GEOTECH RECOMMENDATIONS ON S100)

Dimensions and schedules shown in the diagram include:

- H3 NOT TO EXCEED MAX VALUE PER SCHEDULE 2/S202**
- 8'-2" MIN AT ACCESSIBLE PATH-OF-TRAVEL**
- 1D** (Ignored Depth)
- 6A S501**
- 2 S202**
- 6 S502**
- 4 S501 TYP**
- 6 S502**
- 2 S202**
- 11 S501**
- 8 S501 TYP**
- 2 S202**
- 17 S400**
- 2 S202**
- 9 S602**
- 19 S300**

NOTES:

1. "H3" = MAX HEIGHT FROM GRADE TO TOP OF COLUMN PER 

2. "ID" = IGNORED DEPTH (SEE GEOTECH RECOMMENDATIONS ON S100). 1' 0" M

1 TYPICAL 4 PANEL L-STRUCTURE "UP" SECTION (AT-GRADE OPTION) □

4 SCALE: $\frac{3}{8}$ "=1'

DIMENSION "A"		
<input checked="" type="checkbox"/> 30° PIER	<input type="checkbox"/> 33° PIER	
SOIL PROFILE A	7'-6"	6'-3"
SOIL PROFILE B	17'-6" MAX ⁽¹⁾	10'-3" MAX ⁽²⁾

NOTES:

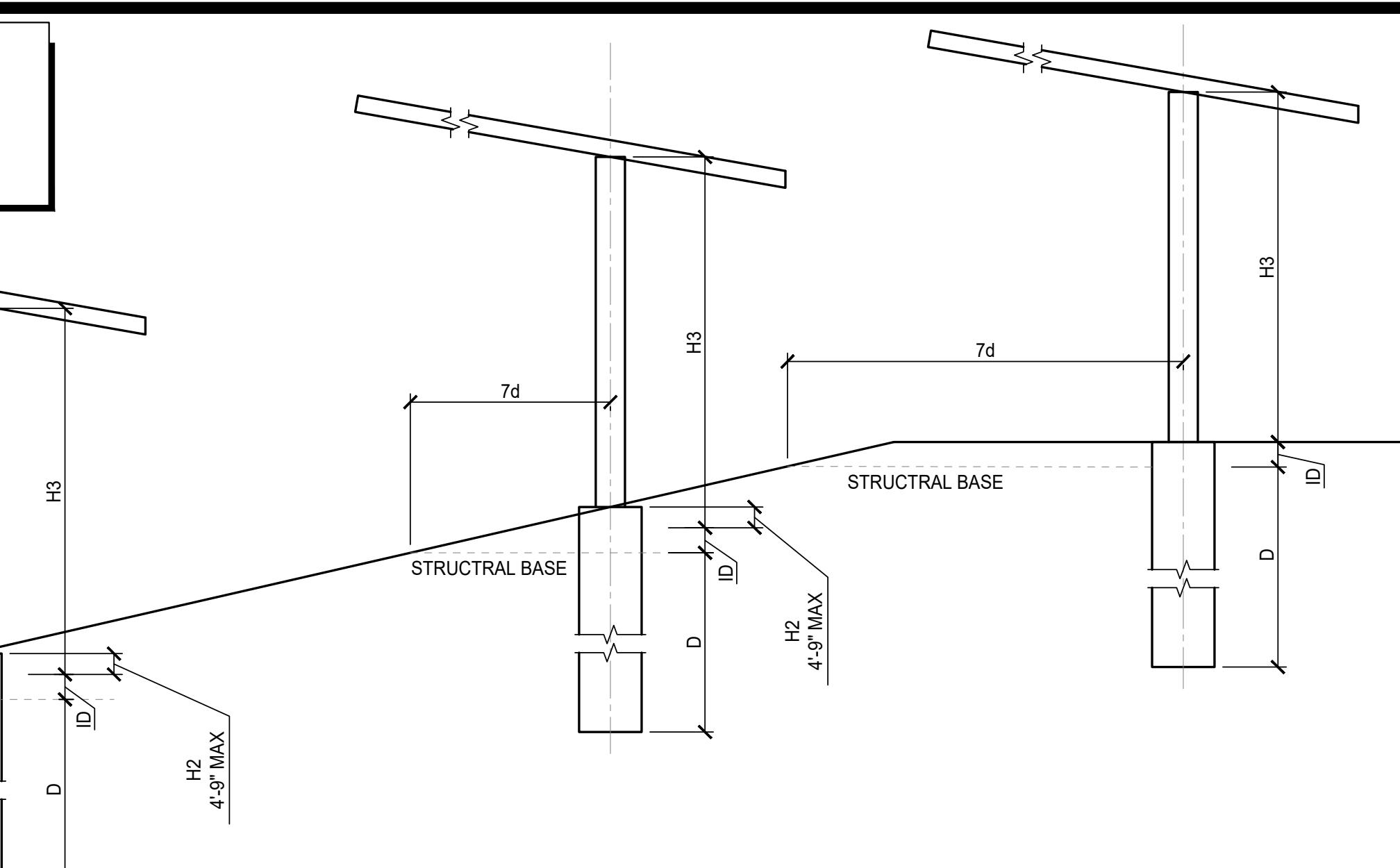
1. DIMENSION 'A' NEED NOT EXCEED THE DEPTH OF THE PIER BELOW THE STRUCTURAL BASE.
2. DIMENSION 'B' = THE REMAINING PIER DEPTH BELOW DIMENSION 'A', OR ZERO IF DIMENSION 'A' IS EQUAL TO THE DEPTH OF THE PIER BELOW THE STRUCTURAL BASE.
3. SPIRAL PITCH 'S1' OCCURS IN THE DIMENSION 'A' REGION, AND SPIRAL PITCH 'S2' OCCURS IN THE DIMENSION 'B' REGION. SEE SCHEDULE 16
4. SEE SOIL PROFILE SELECTION ON S100

1 DIMENSION 'A' AND 'B' SCHEDULE

SCALE: 1"-1'-0"

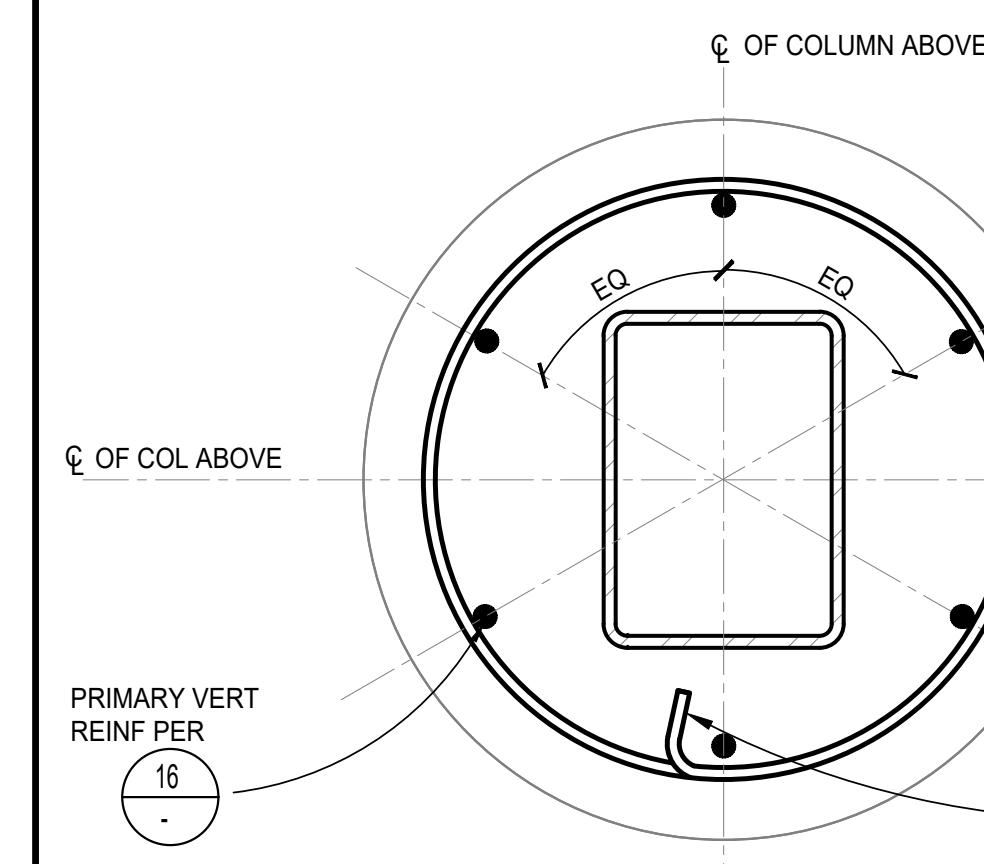
BAR SIZE	D
<input checked="" type="checkbox"/> #7	1'-11"
<input type="checkbox"/> #8	2'-2"
<input type="checkbox"/> #9	2'-5"

NOTE:
 'D' = FOUNDATION DEPTH PER
 'd' = PIER DIAMETER PER
 'ID' = IGNORED DEPTH, PER GEOTECH
 RECOMMENDATIONS ON S100, 1'-0" MAX



2 DEVELOPMENT LENGTH SCHEDULE

NTS

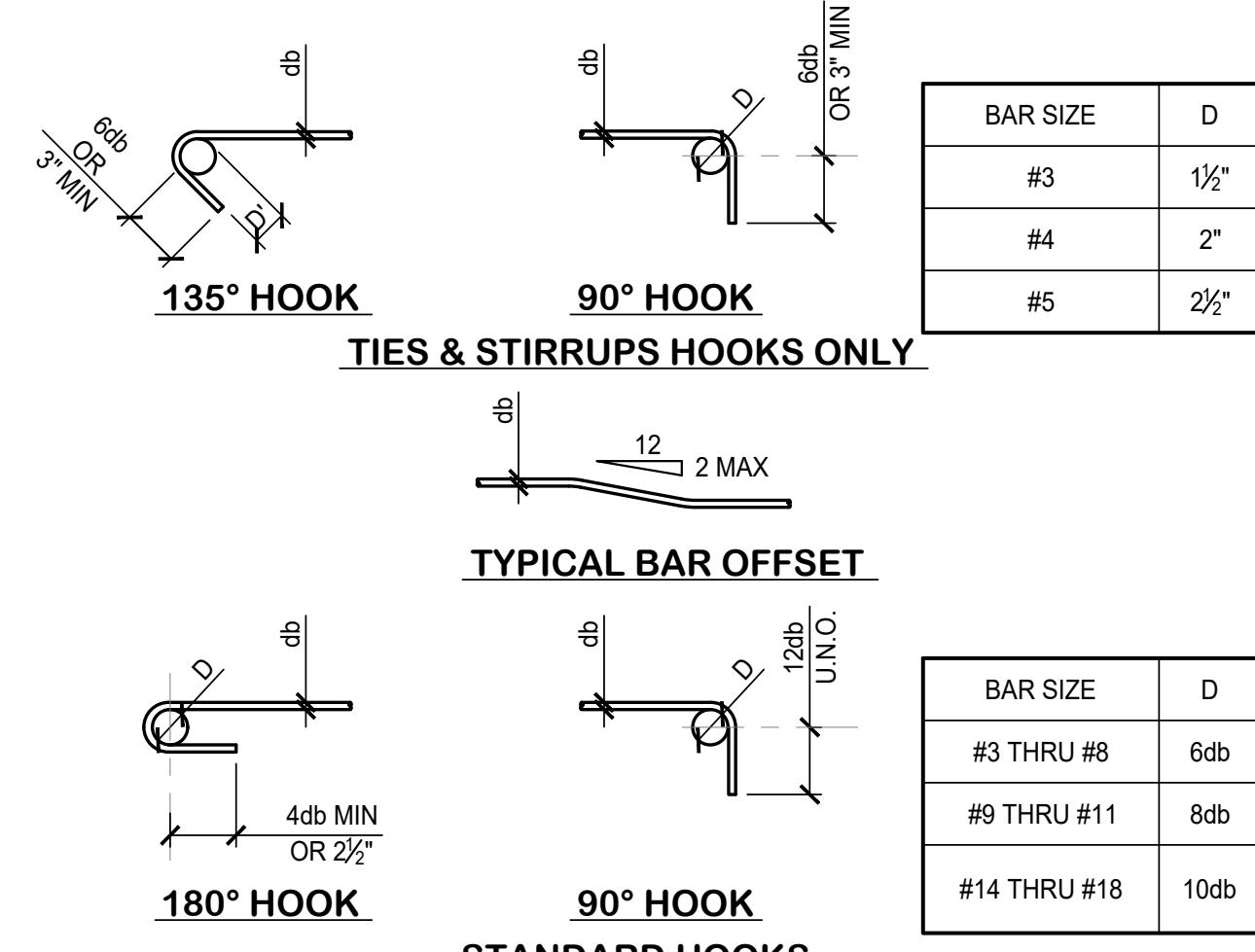


8 CONCRETE CROSS SECTION BELOW STRUCTURAL BASE

NTS

3 FOUNDATIONS ON SLOPED SITES

NTS



9 TYPICAL REINFORCING BAR BENDS

NTS

CONC PIER FOUNDATION AND BASE CONNECTION SCHEDULE												
CANOPY TYPE AND SEISMICITY	H3 MAX H3 = H1+H2	SOIL PROFILE A SPIRAL PITCH (MAX)		SOIL PROFILE B SPIRAL PITCH (MAX)		30° PIER: MIN PIER DEPTH (NOTE 1 AND NOTE 2)		30° PIER EMBEDDED COLUMNS				
		SOIL CLASS V	SOIL CLASS W	SOIL CLASS X	SOIL CLASS Y	MIN EMBEDMENT	PRIMARY VERT REINF	SECOND VERT REINF	SOIL CLASS V	MIN EMBEDMENT	PRIMARY VERT REINF	SECOND VERT REINF
<input type="checkbox"/> T6 SDS<1.0g	<input type="checkbox"/> 14'-0"	S1 = 5 1/4"	S2 = 10 1/2"	S1 = 5 1/4"	S2 = 5 1/4"	16'-6"	14'-9"	12'-9"	NOT APPLICABLE	NOT APPLICABLE		
<input checked="" type="checkbox"/> T6 SDS<1.0g	<input checked="" type="checkbox"/> 18'-0"	S1 = 5 1/4"	S2 = 10 1/2"	S1 = 5 1/4"	S2 = 5 1/4"	17'-3"	14'-9"	12'-9"	5'-10"	(7) #7	(5) #7	
<input type="checkbox"/> T6 SDS<1.5g	<input type="checkbox"/> 14'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	NP	18'-3"	15'-9"	14'-0"	5'-10"	(6) #9	
<input type="checkbox"/> T6 SDS<1.5g	<input type="checkbox"/> 18'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	NP	19'-3"	16'-6"	14'-9"	5'-10"	(9) #8	
<input type="checkbox"/> T5 SDS<1.0g	<input type="checkbox"/> 14'-0"	S1 = 5 1/4"	S2 = 10 1/2"	S1 = 5 1/4"	S2 = 5 1/4"	16'-3"	13'-6"	14'-6"	10'-6"	5'-10"	(7) #7	
<input type="checkbox"/> T5 SDS<1.0g	<input type="checkbox"/> 18'-0"	S1 = 5 1/4"	S2 = 10 1/2"	S1 = 5 1/4"	S2 = 5 1/4"	16'-9"	14'-0"	12'-0"	11'-0"	5'-10"	(5) #7	
<input type="checkbox"/> T5 SDS<1.5g	<input type="checkbox"/> 14'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	NP	17'-3"	15'-0"	13'-3"	5'-10"	(6) #9	
<input type="checkbox"/> T5 SDS<1.5g	<input type="checkbox"/> 18'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	NP	18'-3"	15'-9"	13'-9"	5'-10"	(9) #8	
<input checked="" type="checkbox"/> L4 SDS<1.0g	<input checked="" type="checkbox"/> 14'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	16'-0"	13'-0"	14'-3"	10'-6"	5'-10"	(6) #9	
<input type="checkbox"/> L4 SDS<1.0g	<input type="checkbox"/> 18'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	16'-9"	14'-0"	12'-3"	11'-0"	5'-10"	(2) #9	
<input type="checkbox"/> L4 SDS<1.5g	<input type="checkbox"/> 14'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	19'-3"	15'-9"	13'-9"	12'-3"	5'-10"	(6) #9	
<input type="checkbox"/> L4 SDS<1.5g	<input type="checkbox"/> 18'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	20'-0"	16'-0"	14'-6"	13'-0"	5'-10"	(2) #9	
<input type="checkbox"/> L3 SDS<1.0g	<input type="checkbox"/> 14'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	14'-0"	11'-9"	10'-6"	9'-0"	5'-10"	(6) #9	
<input type="checkbox"/> L3 SDS<1.0g	<input type="checkbox"/> 18'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	14'-6"	12'-3"	10'-9"	10'-0"	5'-10"	(2) #9	
<input type="checkbox"/> L3 SDS<1.5g	<input type="checkbox"/> 14'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	17'-3"	14'-3"	12'-6"	11'-0"	5'-10"	(6) #9	
<input type="checkbox"/> L3 SDS<1.5g	<input type="checkbox"/> 18'-0"	S1 = 6"	S2 = 12"	S1 = 6"	S2 = 6"	17'-9"	14'-9"	13'-0"	11'-6"	5'-10"	(2) #9	

NOTES:

1. PIER DEPTHS ARE MEASURED FROM STRUCTURAL BASE AND ARE BASED ON AN IGNORED DEPTH OF 1'-0" MAX. PC IS NOT ALLOWED WHEN GEOTECH REPORT REQUIRES AN IGNORED DEPTH GREATER THAN 1'-0". SEE GEOTECH RECOMMENDATIONS ON S100.
2. FOR 30° PIER, THE DEPTH (MEASURED FROM STRUCTURAL BASE) MUST BE LESS THAN 20'-0"*
3. FOR 33° PIER, THE DEPTH (MEASURED FROM STRUCTURAL BASE) MUST BE LESS THAN 22'-0"*
4. NP = NOT PERMITTED, SEE 33° PIER OPTION

16 CONCRETE PIER FOUNDATION AND BASE CONNECTION SCHEDULE

NTS

19 CONCRETE PIER DETAIL (PIER AT GRADE)

NTS

20 CONCRETE PIER DETAIL

NTS

CONCRETE CROSS SECTION ABOVE STRUCTURAL BASE

NTS

TEICHERT SOLAR

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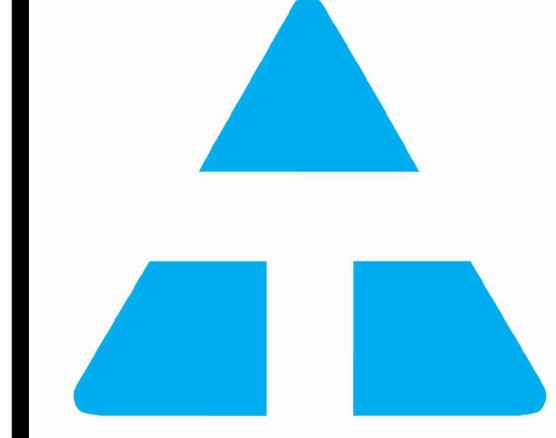
TEICHERT / KPFF
DSA - PC PV STRUCTURE SYSTEM
DSA - PC PV EMBEDDED COLUMN

REVISION SCHEDULE
Design No. - Description Date DB
FLAR REVIEW SUBMITTAL 02/14/2023 JUN SN
V2 SUBMITTAL 05/23/2023 JUN SN
V3 SUBMITTAL 07/11/2023 JUN SN
V4 SUBMITTAL 07/21/2023 JUN SN

DATE 07/21/2023
DRAWN BY JM

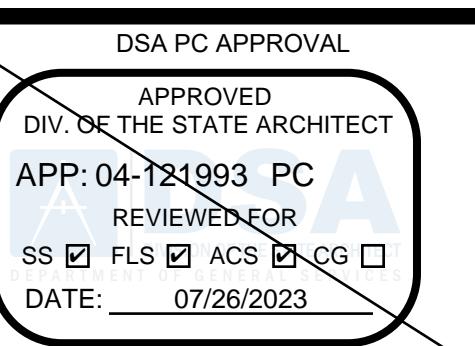
0" 1" 2"
ORIGINAL SHEET SIZE 30 x 42
IF BAR IS NOT TO SCALE - DRAWING IS NOT TO SCALE

SHEET S300



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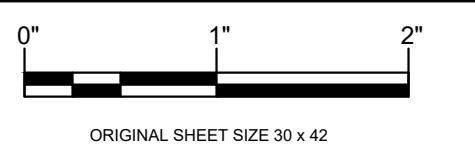


TEICHERT / KPFF
DSA - PC PV STRUCTURE SYSTEM
STEEL DETAILS

REVISION SCHEDULE	
Design No. - Description	Date
FLAR REVIEW SUBMITTAL	02/14/2023 JN SN
V2 SUBMITTAL	05/23/2023 JN SN
V3 SUBMITTAL	07/11/2023 JN SN
V4 SUBMITTAL	07/21/2023 JN SN

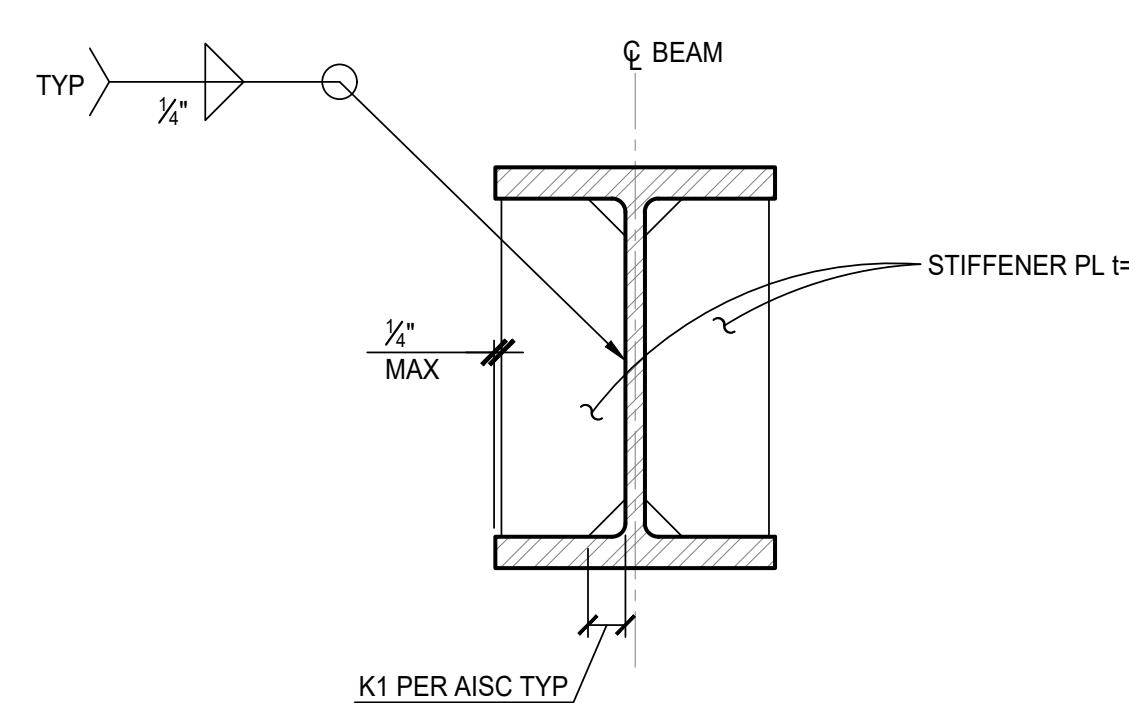
DATE 07/21/2023

DRAWN BY JM

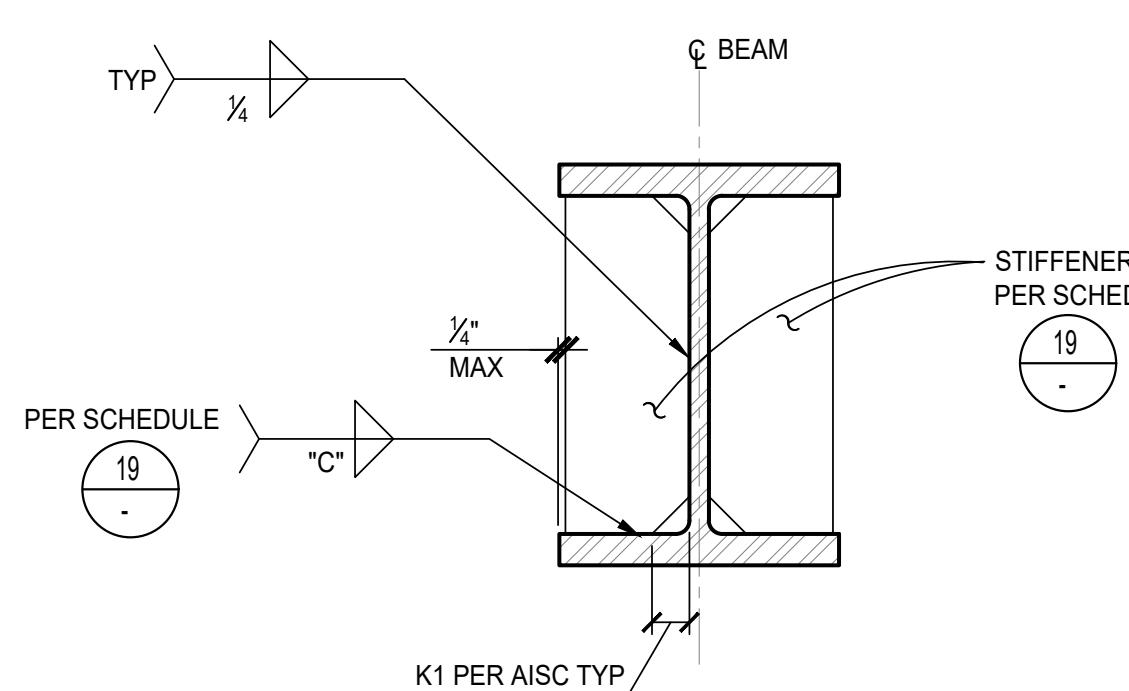


ORIGINAL SHEET SIZE 30 x 42
IF BAR IS NOT TO SCALE - DRAWING IS NOT TO SCALE

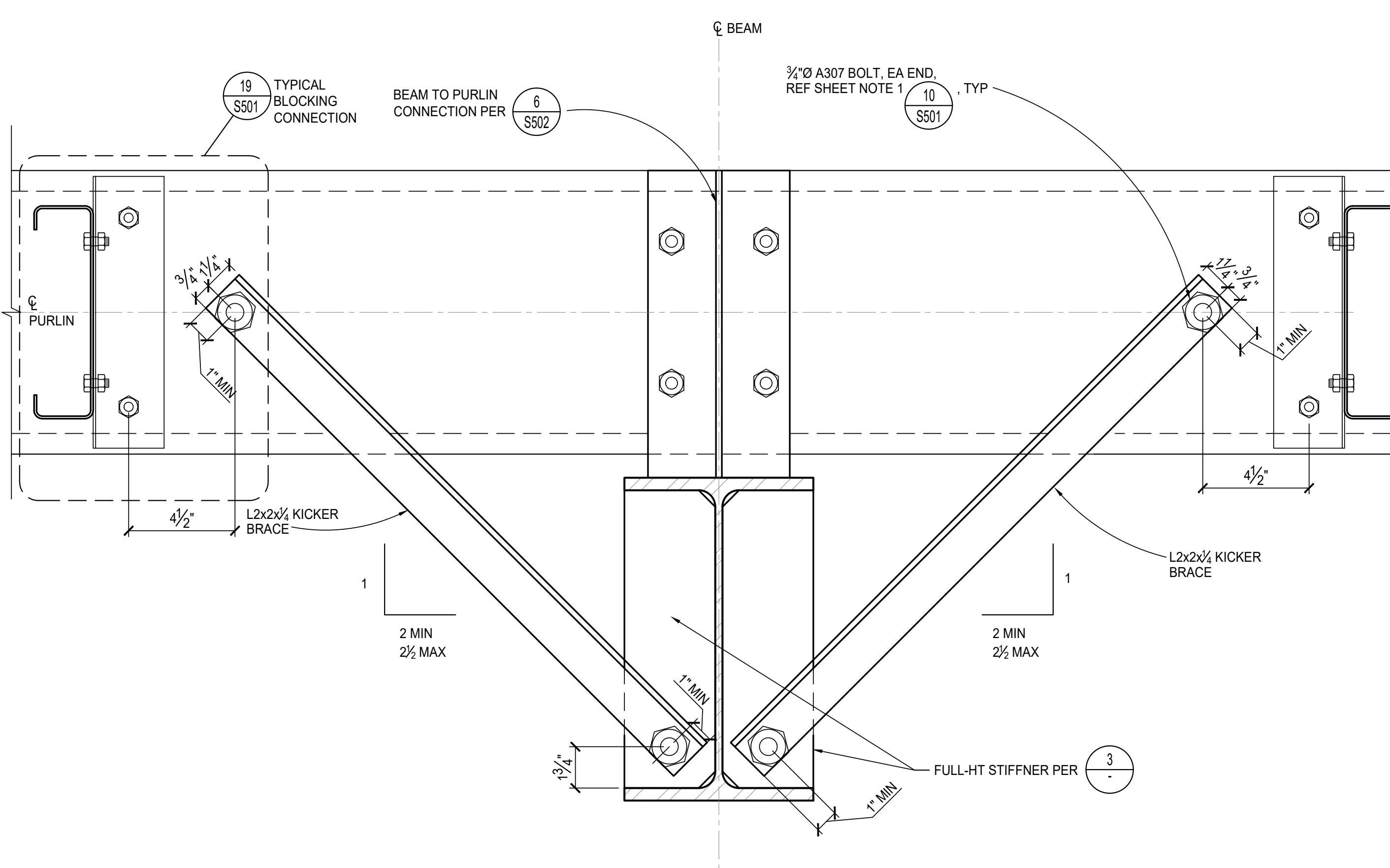
SHEET S400



3 TYPICAL STIFFENER PLATE DETAIL



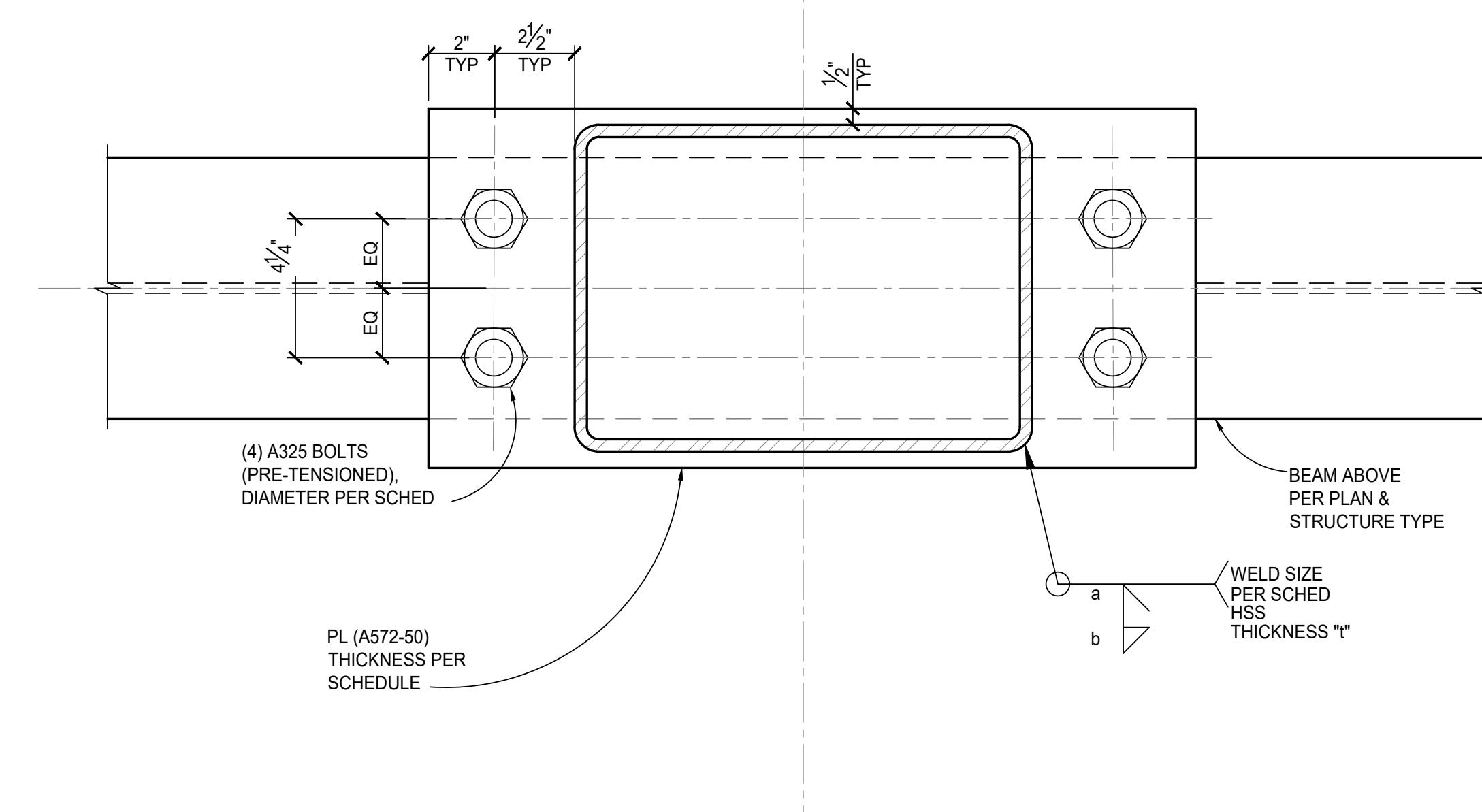
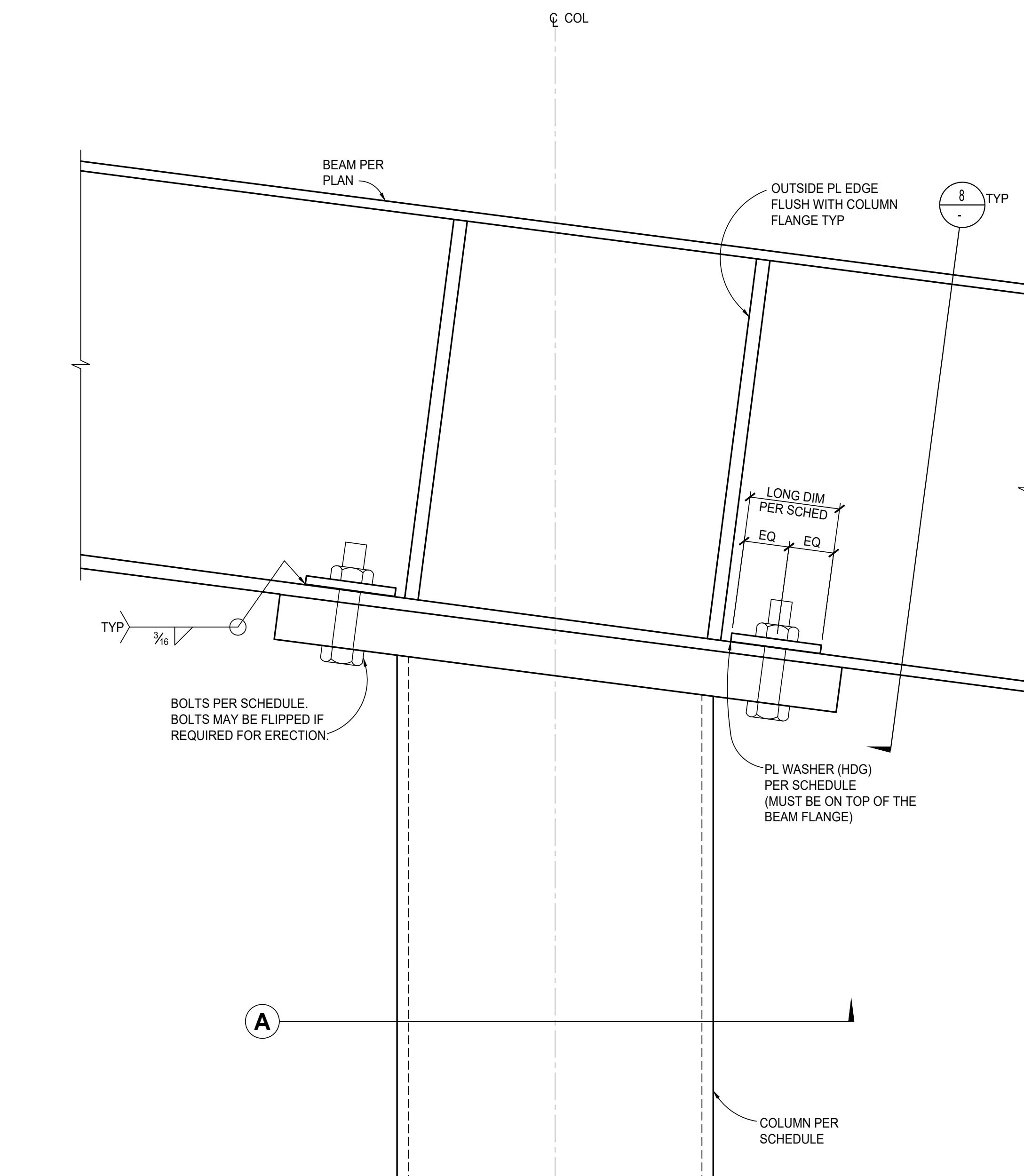
8 STIFFENER PLATE DETAIL AT COLUMN



17 KICKER BRACE DETAIL

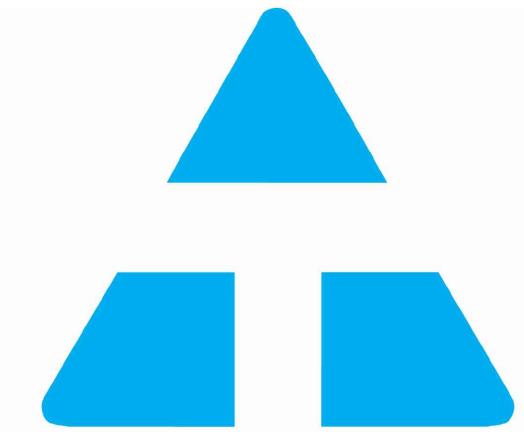
SCALE: 3'-0"

WF BEAM-TO HSS COLUMN SCHEDULE						
STRUCTURE TYPE	WELD SIZE	BOLT DIA	CAP PL THICKNESS	PL WASHER	STIFF PL THICKNESS	WELD SIZE "C"
<input checked="" type="checkbox"/> S _{DS} <1.50g T-6 STRUCTURE	a = N/A b = 1/8"	1 1/8"	1/2"	1/8" x 1 1/4" x 3 1/2"	1/8"	1/8"
<input type="checkbox"/> S _{DS} <1.50g T-5 STRUCTURE	a = N/A b = 1/8"	1"	1/2"	1/8" x 1 1/4" x 3 1/2"	1/8"	1/8"
<input checked="" type="checkbox"/> S _{DS} <1.50g L-4 STRUCTURE	a = 1/8" b = 1/8"	1 1/8"	2"	3/8" x 1 1/4" x 3 1/2"	1/2"	1/8"
<input type="checkbox"/> S _{DS} <1.50g L-3 STRUCTURE	a = 1/8" b = 1/8"	1 1/8"	2"	3" x 1 1/4" x 3 1/2"	1/2"	1/8"

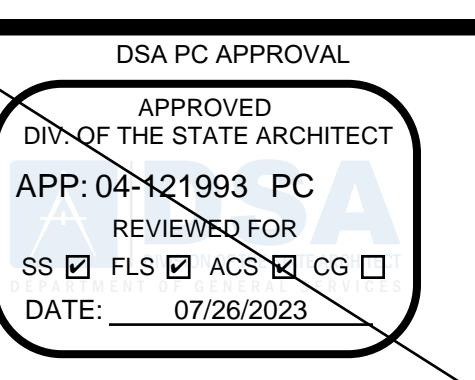


19 BEAM TO COLUMN CONN

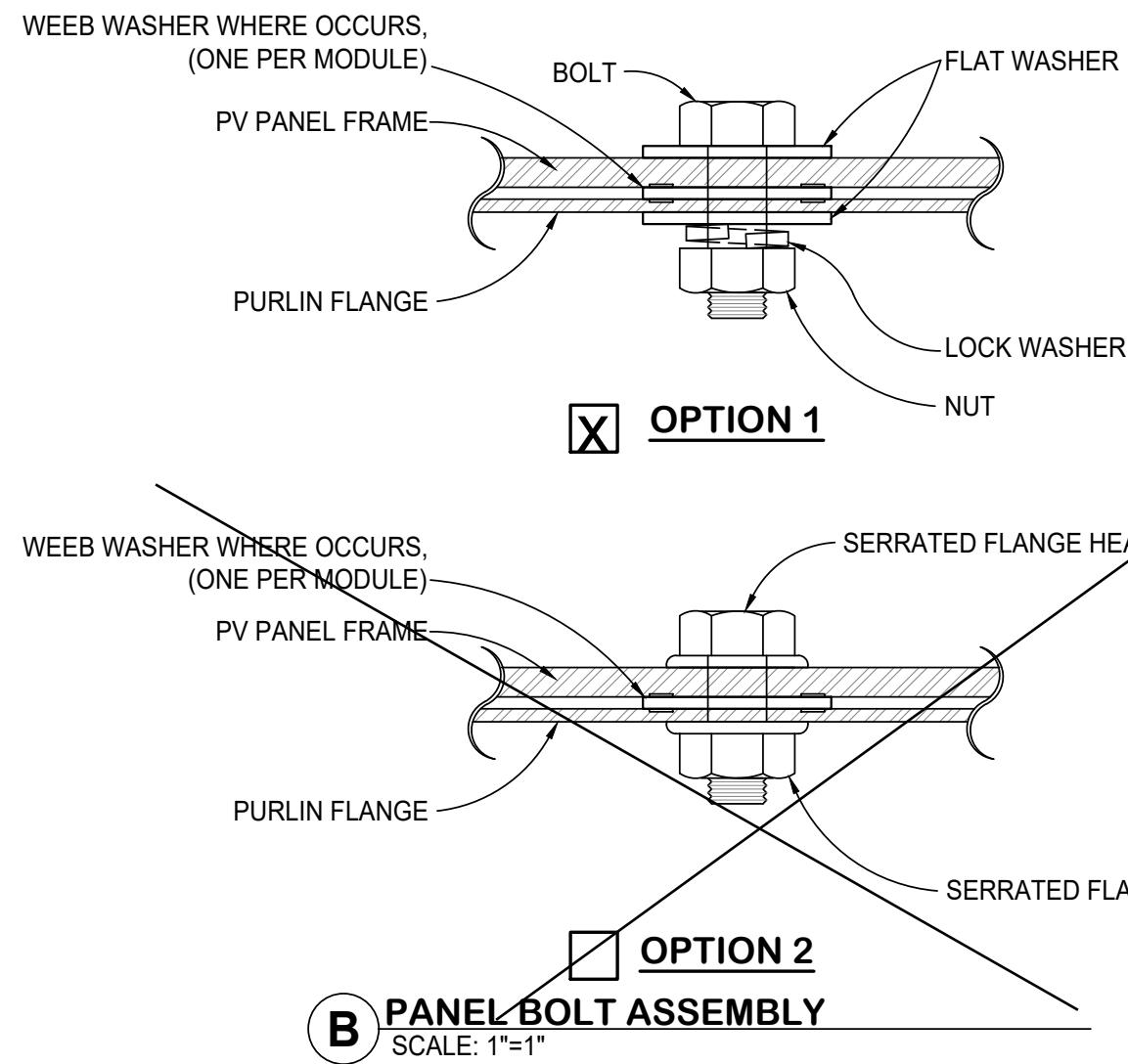
SCALE: 3'-0"



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DSA - PC PV STRUCTURE SYSTEM

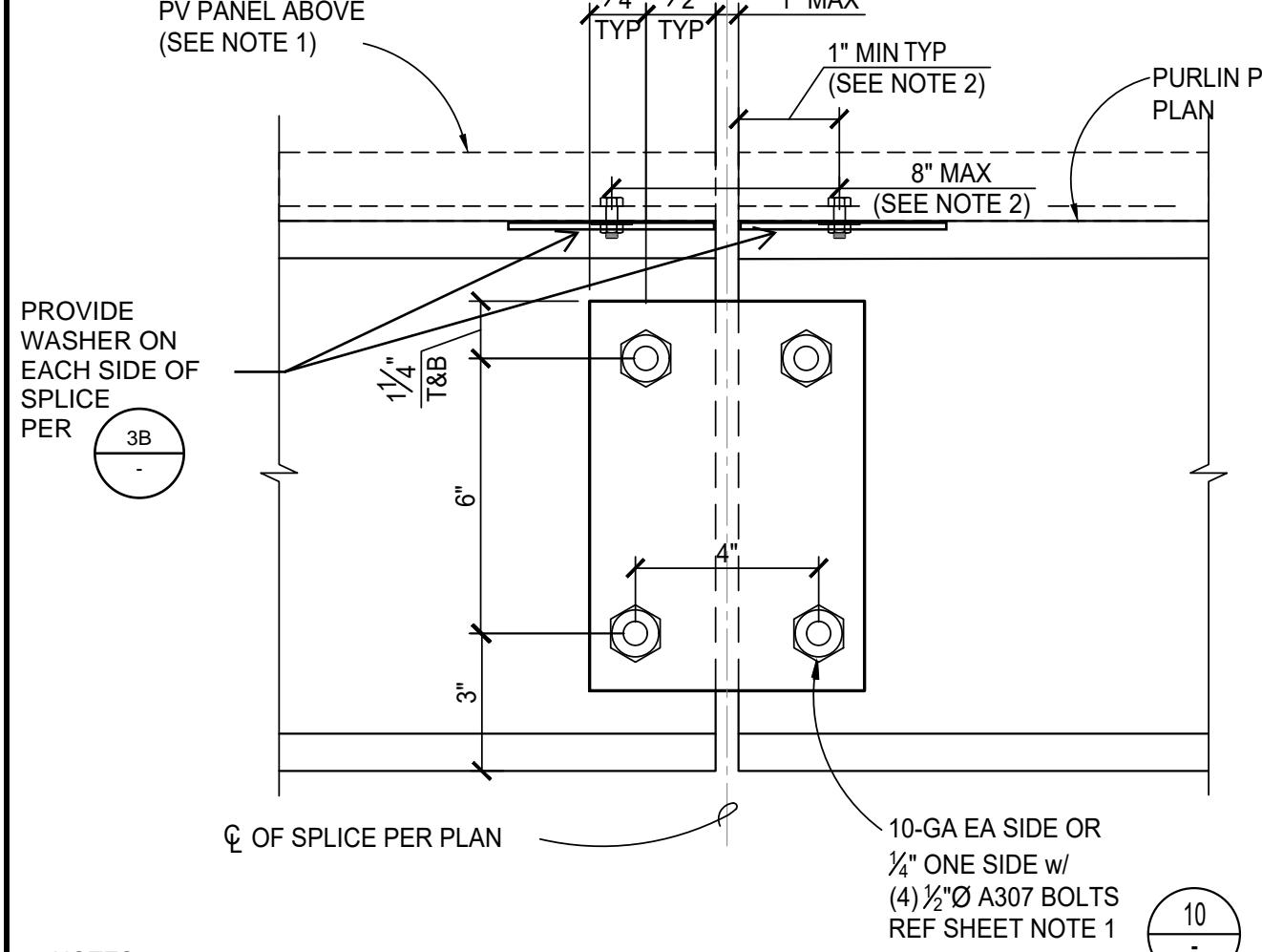
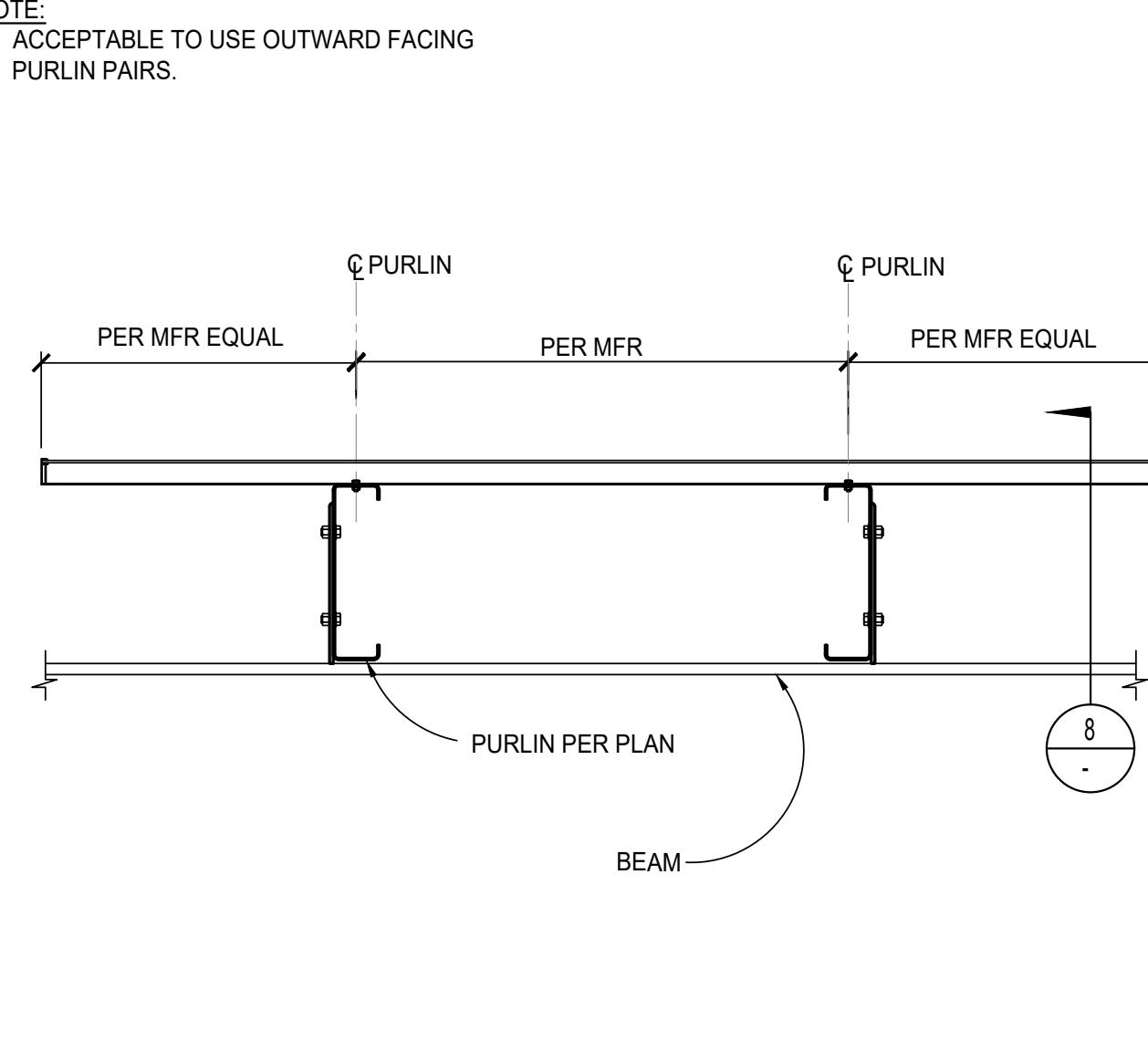
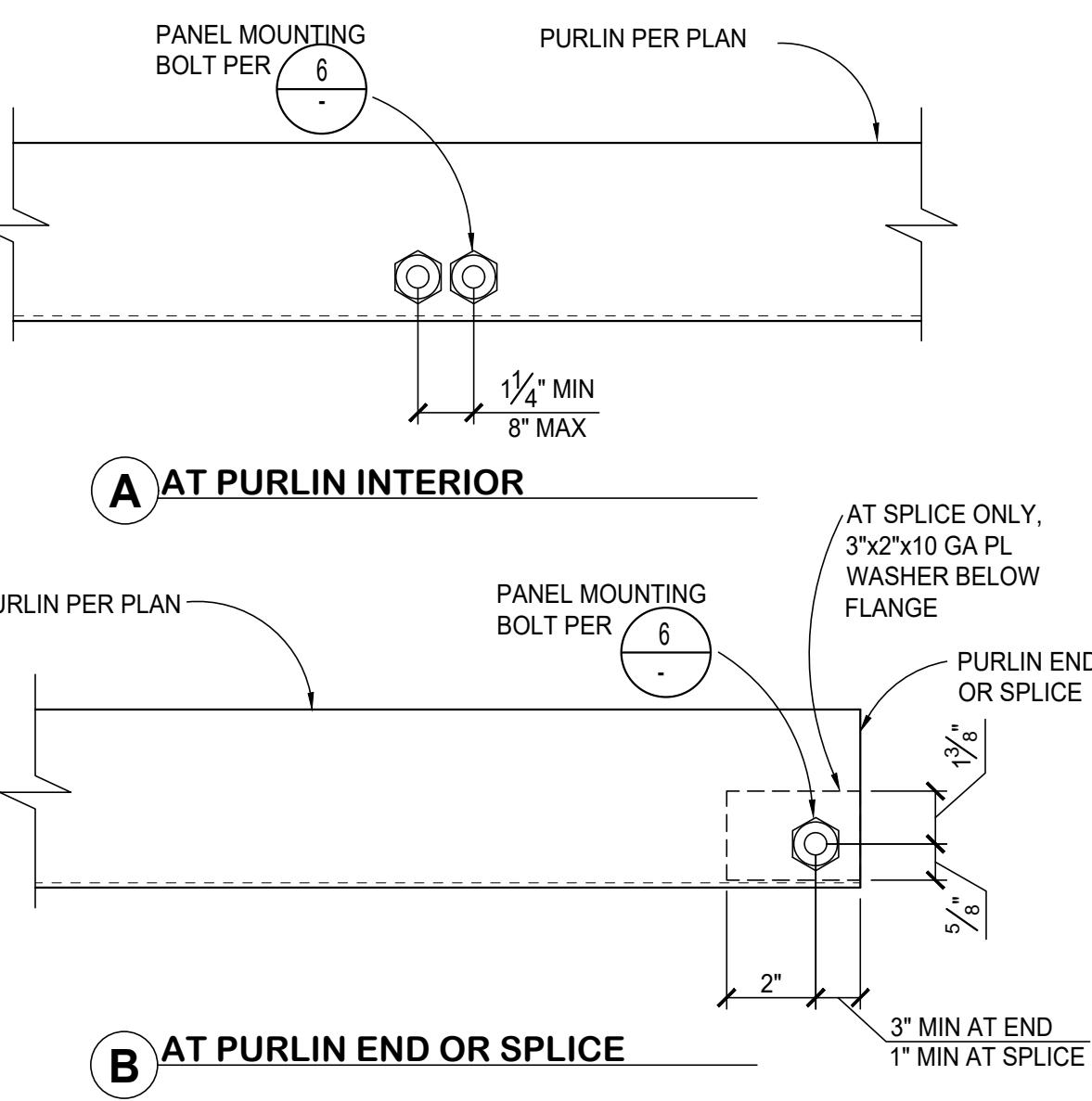
COLD-FORMED DETAILS



NOTES:

- PRIOR TO PRETENSIONED PANEL FASTENER INSTALLATION, THE CONTRACTOR MUST SUBMIT TO THE PROFESSIONAL IN RESPONSIBLE CHARGE FOR REVIEW AND ACCEPTANCE A DETAIL DRAWING OUTLINING THE PRETENSIONED PANEL FASTENER INSTALLATION PROCEDURE OUTLINING PROVISIONS TO ENSURE ALL PRETENSIONED PANEL FASTENERS ARE INSTALLED AND TORQUED WITHIN THE SPECIFIED MINIMUM AND MAXIMUM TORQUE RANGE. A COPY OF THE RESPONSIBLE DESIGN PROFESSIONAL-ACCEPTED INSTALLATION PROCEDURE SHALL BE PROVIDED TO THE SPECIAL INSPECTOR AND PROJECT INSPECTOR PRIOR TO COMMENCING PANEL FASTENER INSTALLATION.
- SPECIAL INSPECTION AND TORQUE TESTING OF PRETENSIONED PANEL FASTENER INSTALLATION SHALL BE PERFORMED BY A QUALIFIED REPRESENTATIVE OF THE LABORATORY OF RECORD (LOR) IN ACCORDANCE WITH SECTION 2.18 OF DSA R-PC-7 PC DESIGN CRITERIA FOR CANTILEVERED CANOPY STRUCTURES.
- BOLT SIZE PER PANEL MFR. SEE SCHEDULE BELOW. BOLT SHALL BE ASTM F593C AND NUT SHALL BE ASTM F594C.
- CONNECTION LOCATION TO ALIGN WITH THE POINT OF CONNECTION ON THE SITE SPECIFIC PV PANEL PER THE UL 61730 TESTING.

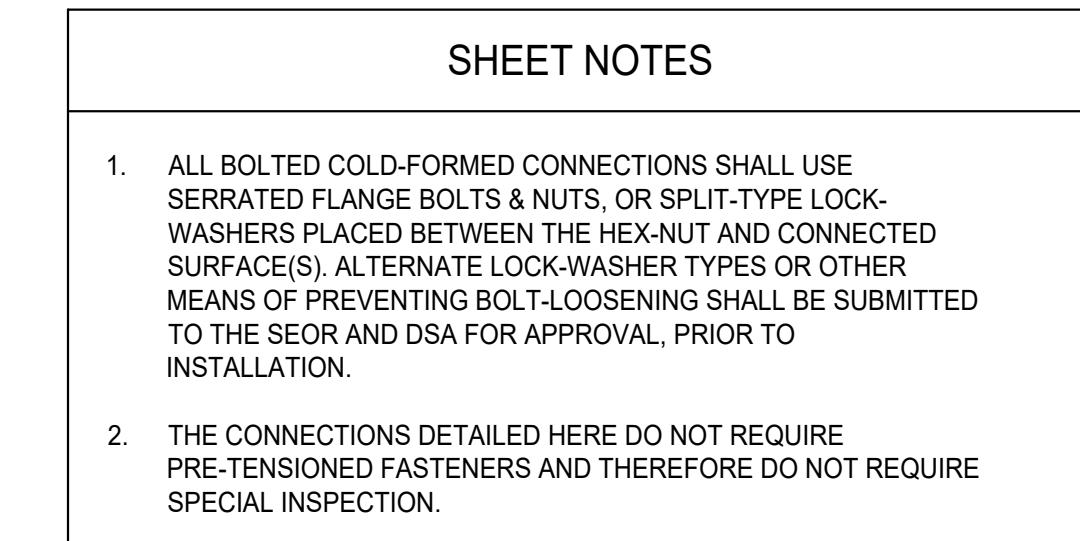
PANEL BOLT SCHEDULE	
BOLT SIZE	TORQUE RANGE
<input type="checkbox"/> $\frac{1}{8}$ "	8-10 FT-LB
<input checked="" type="checkbox"/> $\frac{3}{16}$ "	12-15 FT-LB



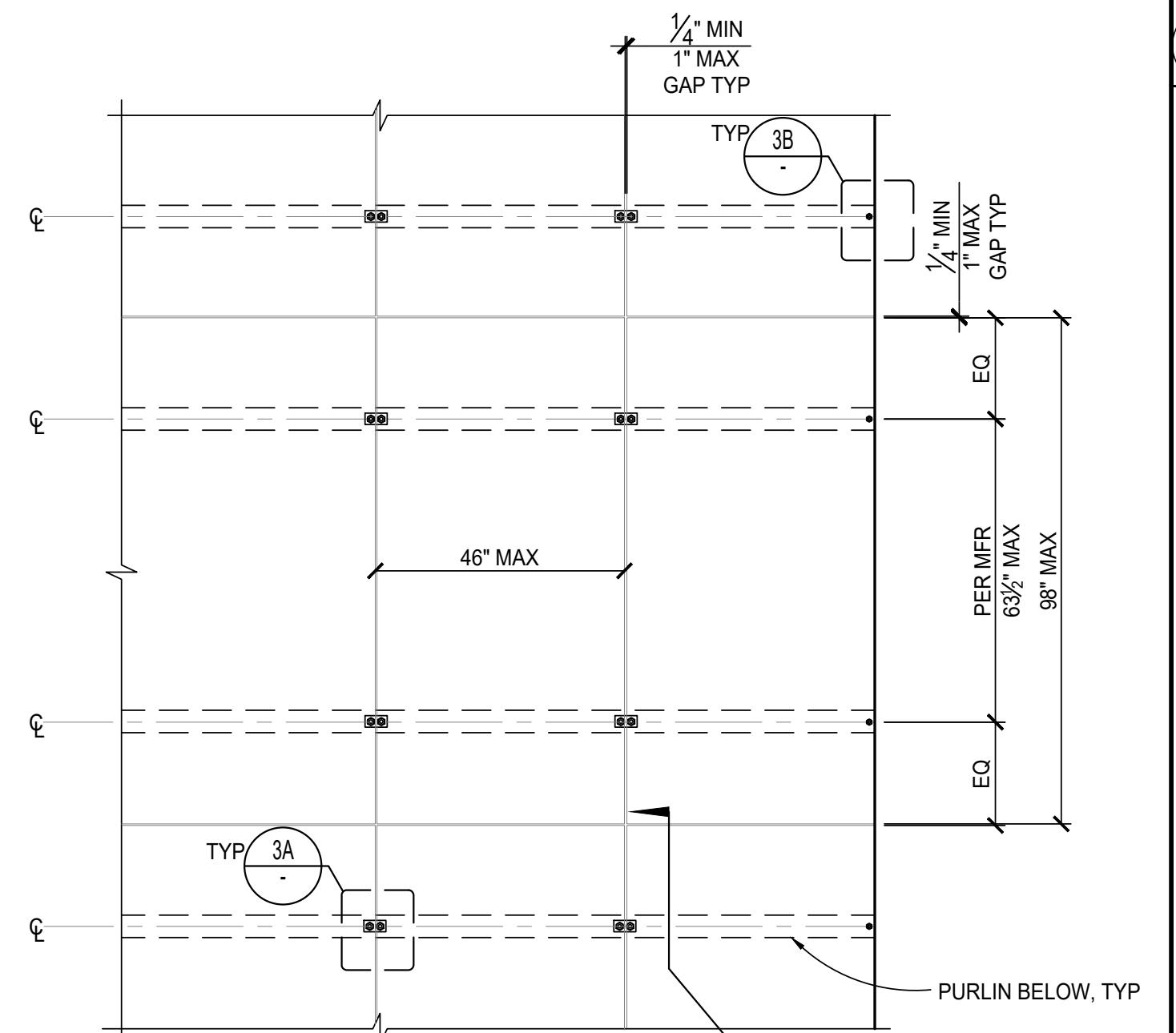
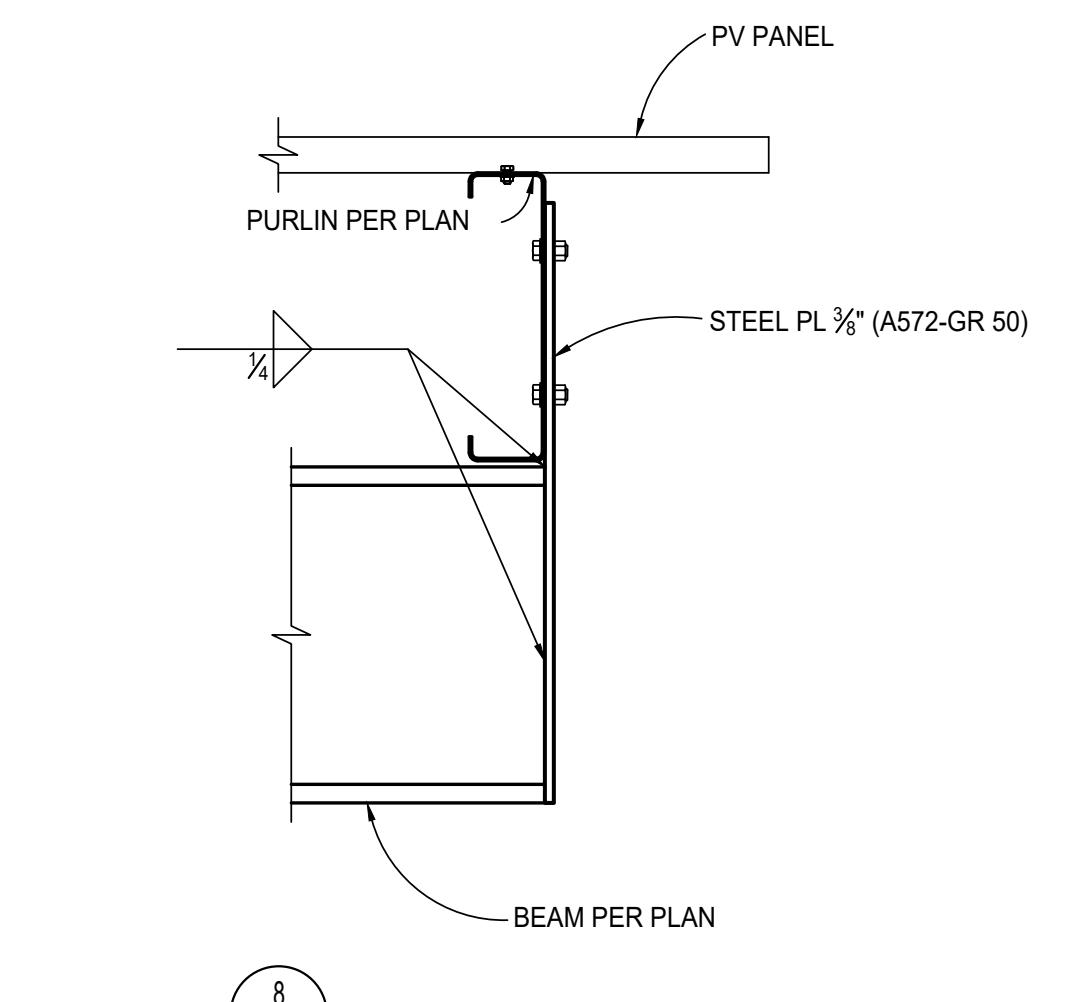
NOTES:

- PV PANEL IS NOT PERMITTED TO CROSS SPLICES PER THIS DETAIL.
- PV PANEL BOLT LOCATIONS TO ALIGN WITH THE POINT OF CONNECTION PER UL 61730 TESTING. LOCATIONS SHALL NOT VIOLATE MINIMUM EDGE DISTANCE ON PURLINS OR MAXIMUM SPACING OF BOLTS ACROSS SPLICE AS SHOWN

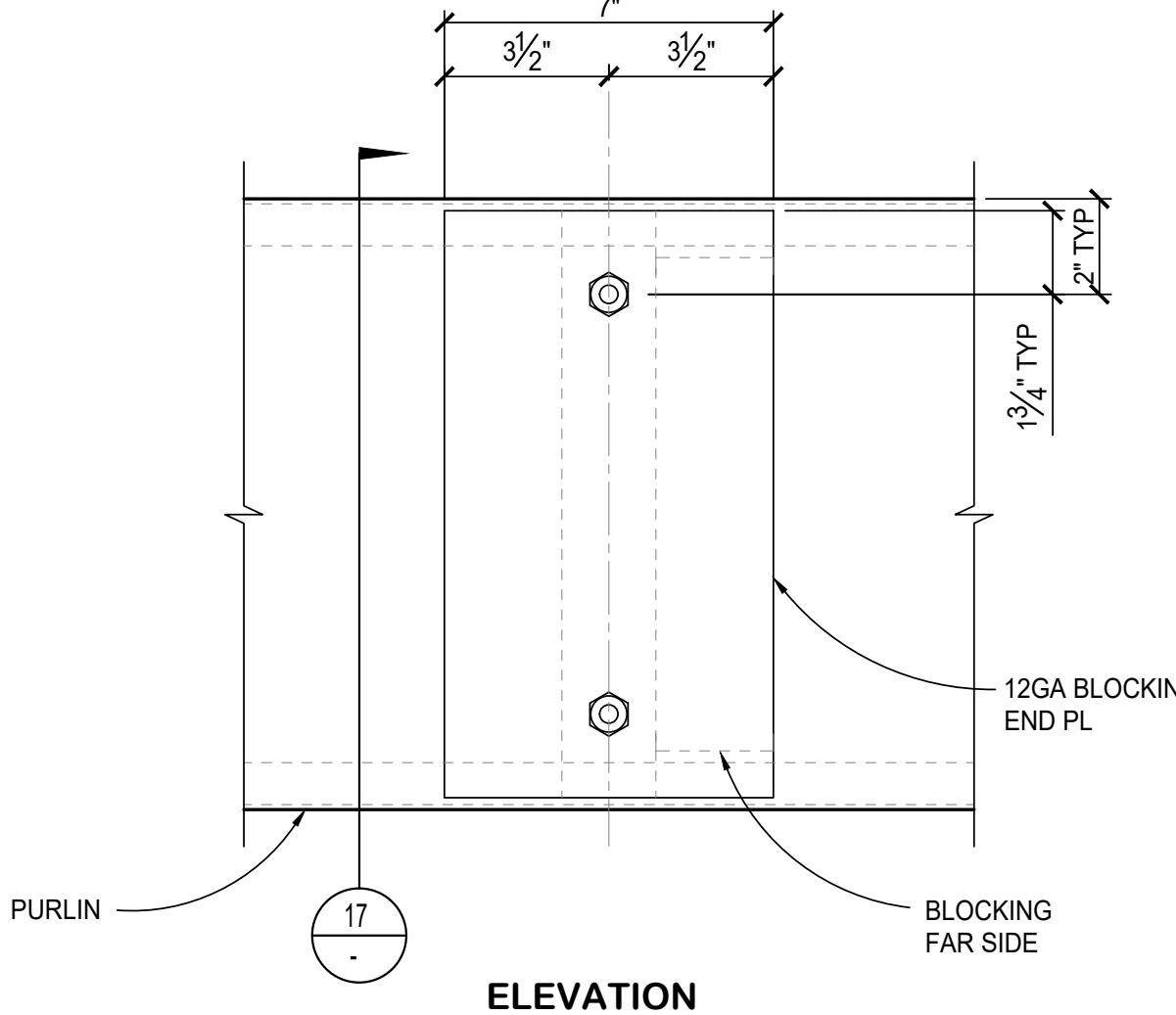
5 TYPICAL PURLIN TO PURLIN CONN



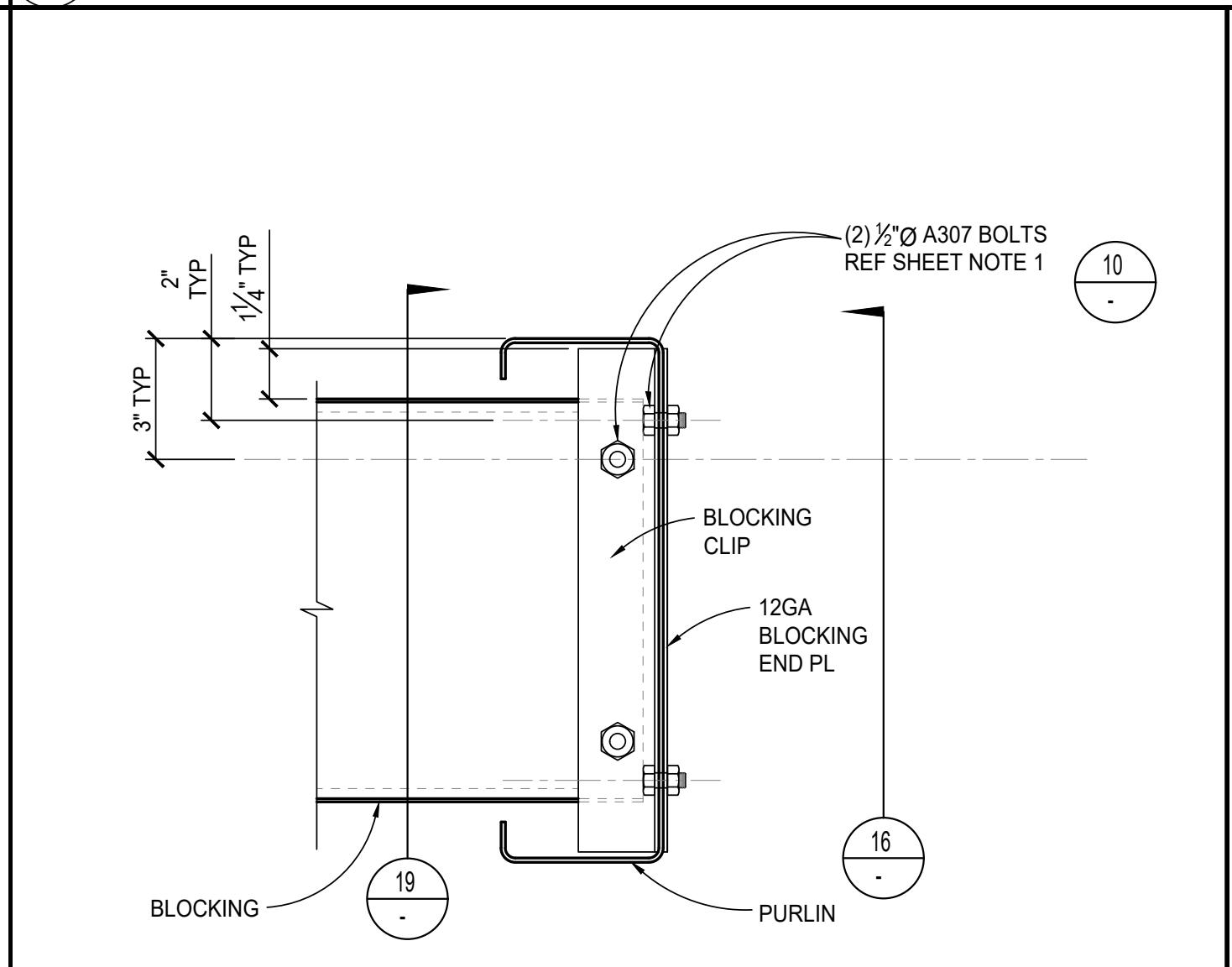
6 PV PANEL ATTACHMENT DETAIL

SCALE: $\frac{1}{8}$ "=1'-0"

11 PURLIN TO BEAM CONN AT END CONDITION

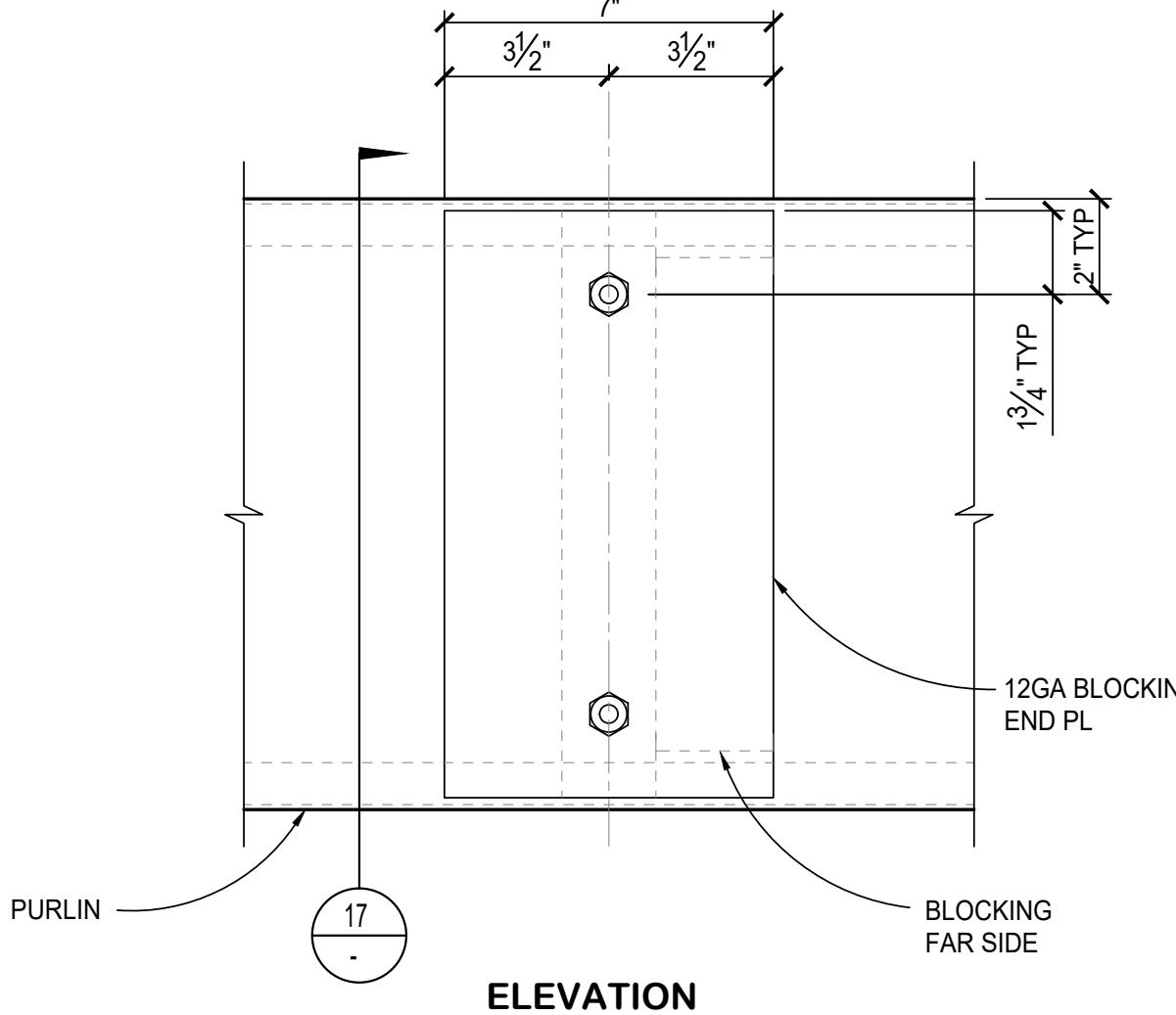
SCALE: $\frac{1}{8}$ "=1'-0"

12 BLOCKING DETAIL

SCALE: $\frac{1}{8}$ "=1'-0"

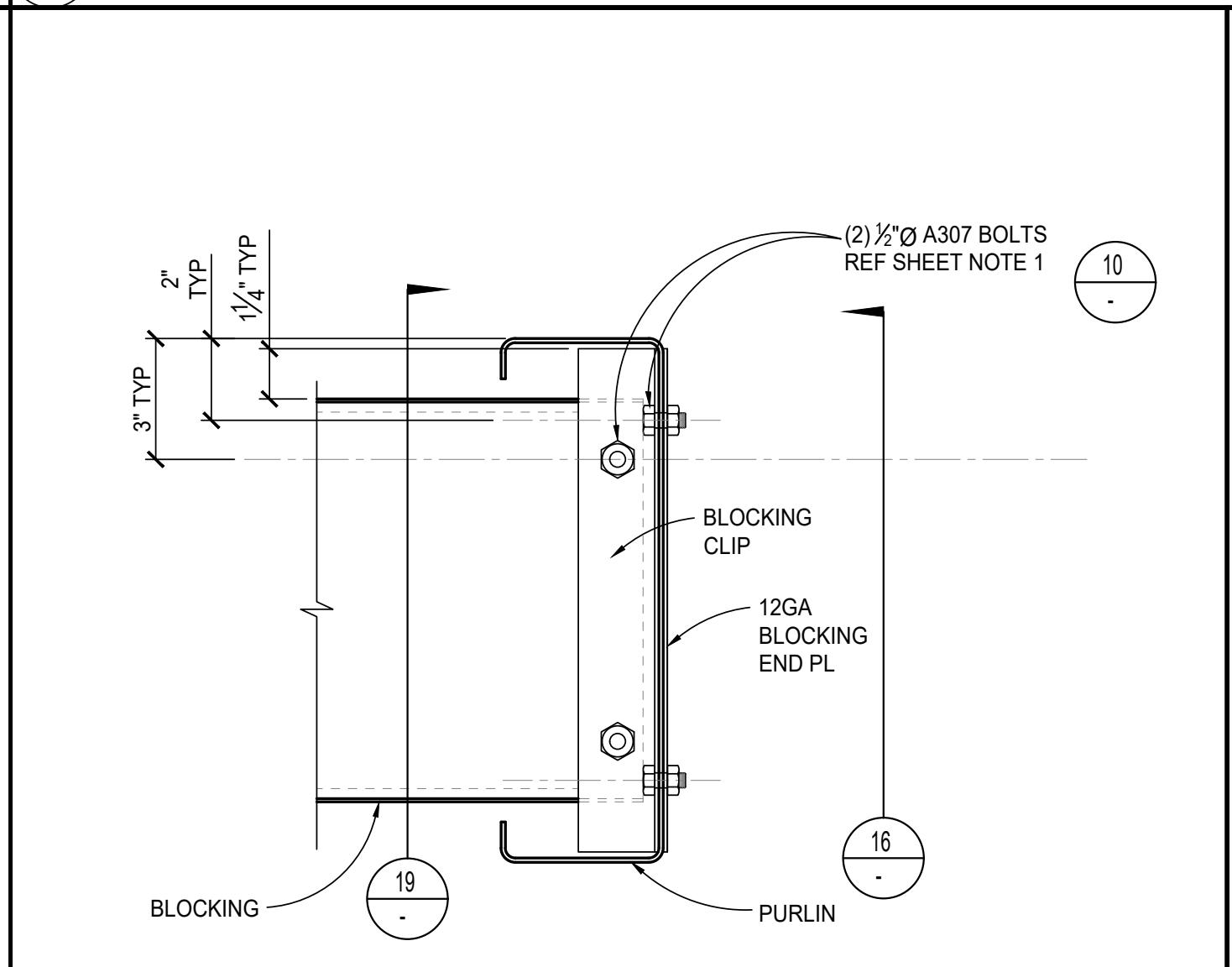
16 END PURLIN BLOCKING CONNECTION

SCALE: 3"-1'-0"



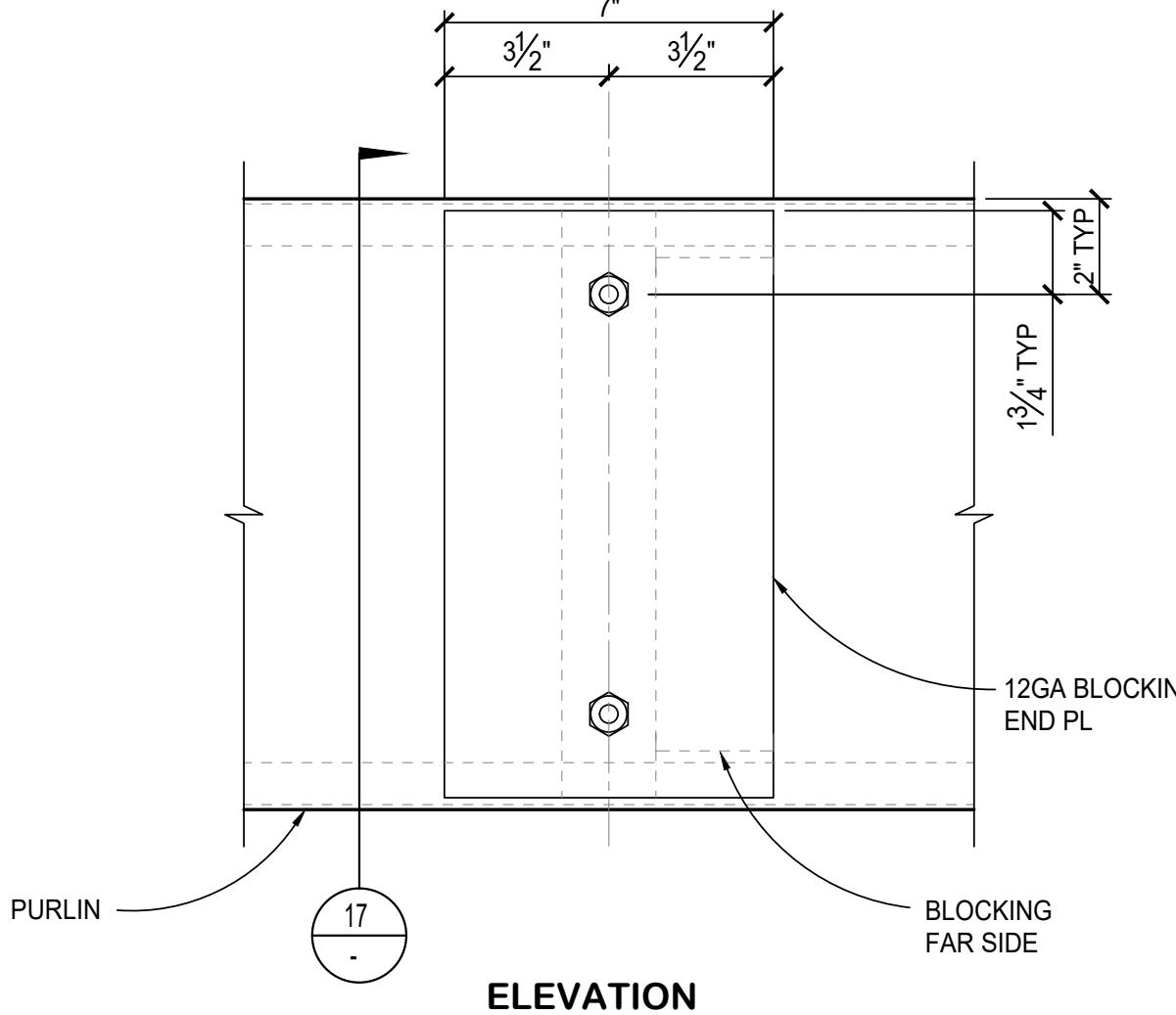
17 END PURLIN BLOCKING CONNECTION

SCALE: 3"-1'-0"



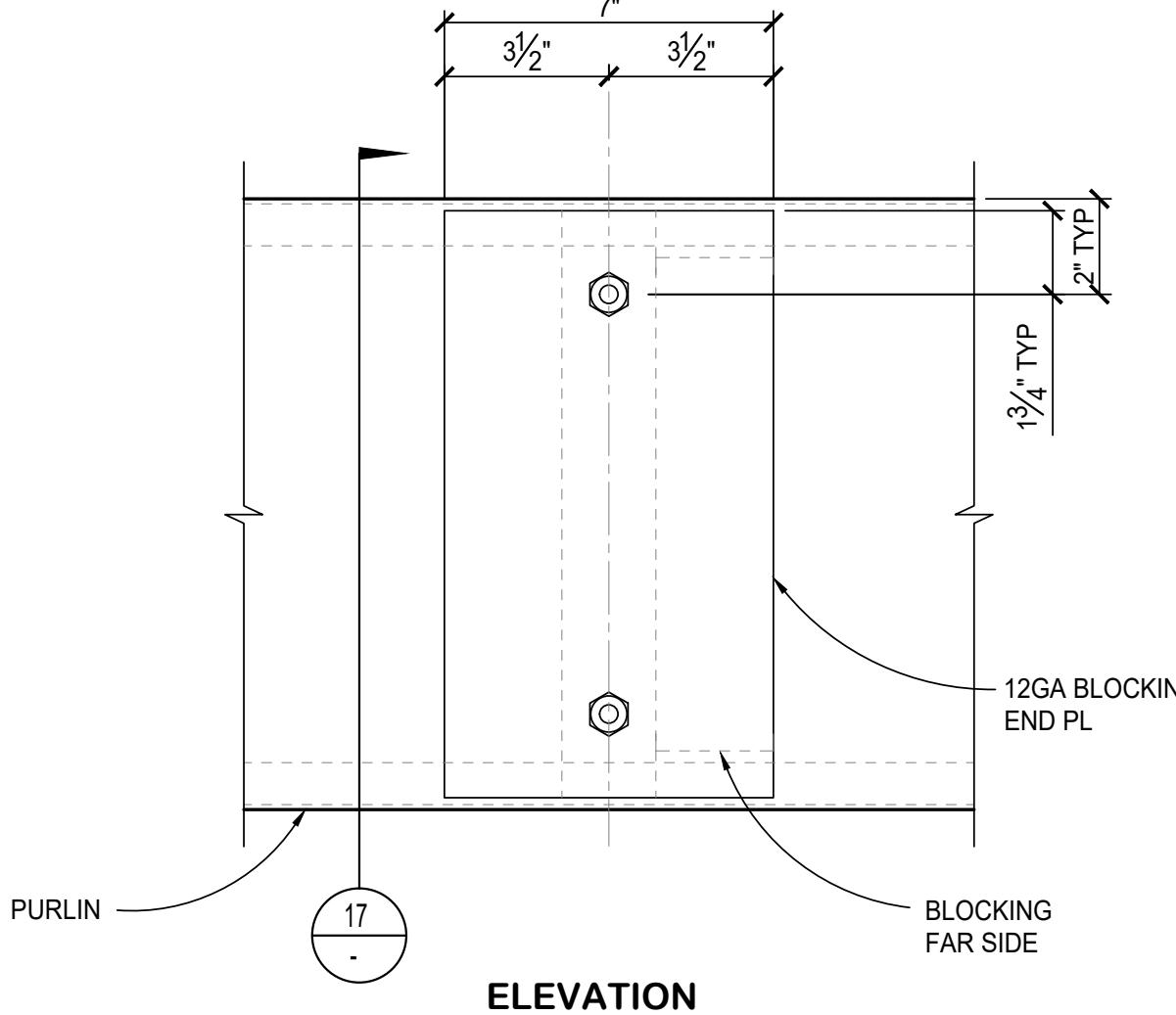
18 TYP BLOCKING CONNECTION

SCALE: 3"-1'-0"



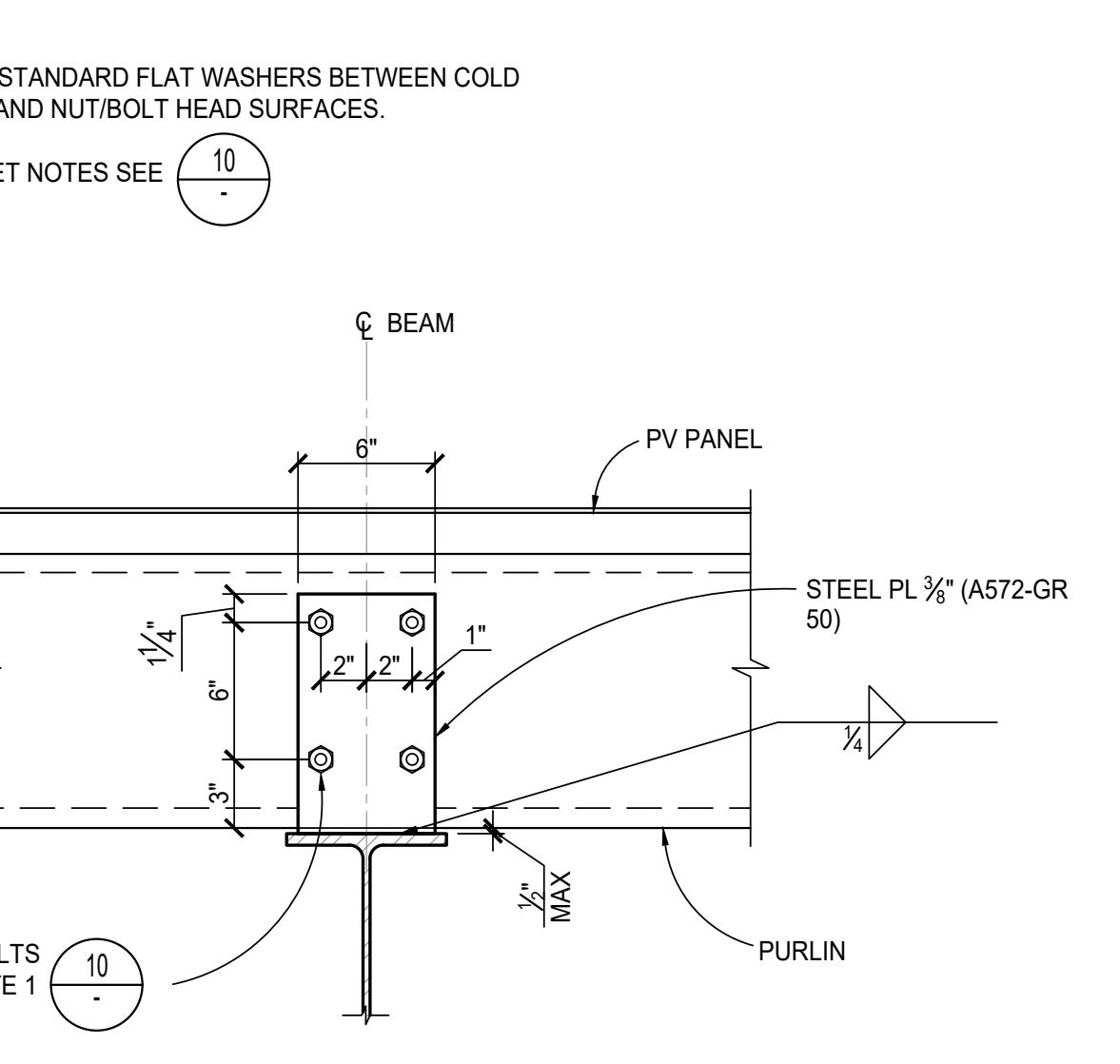
19 TYP BLOCKING CONNECTION

SCALE: 3"-1'-0"

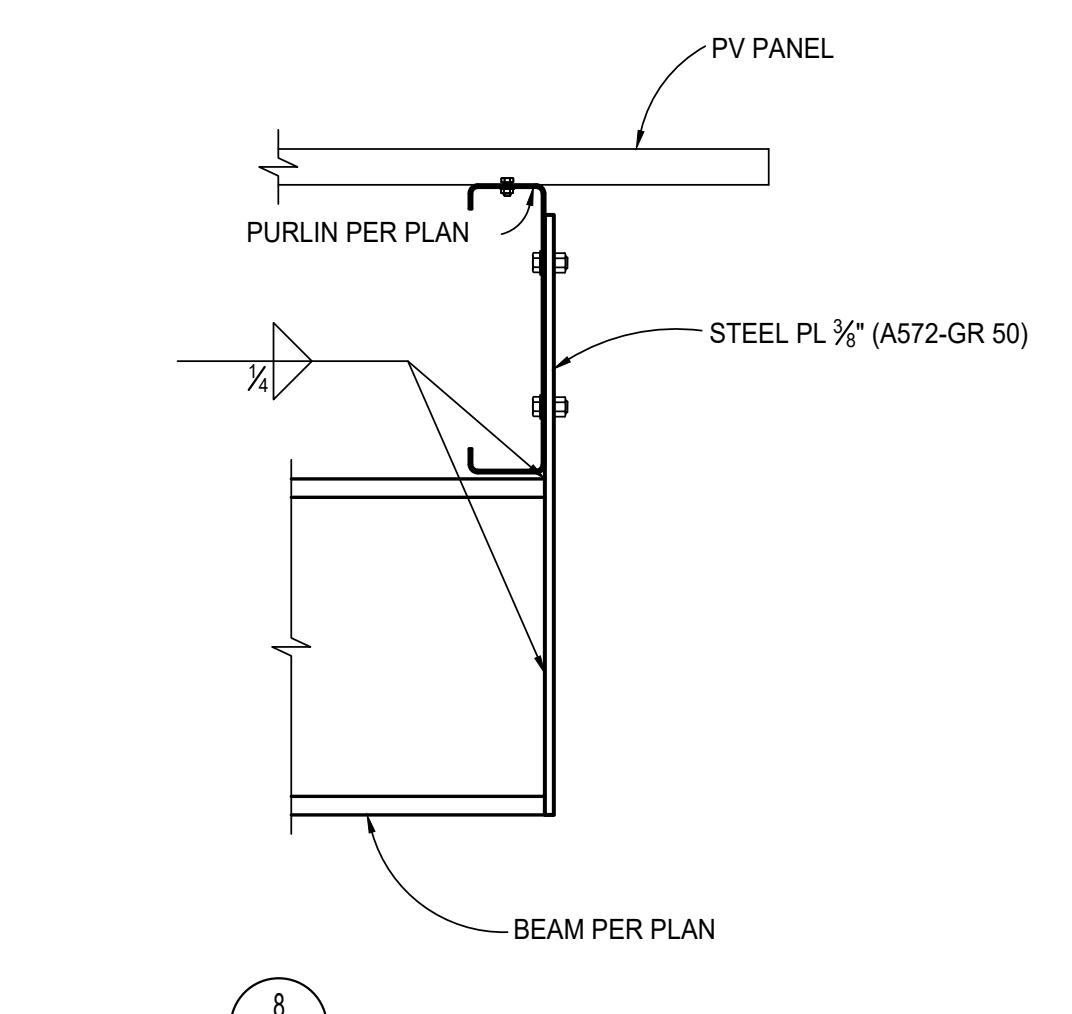


3 MOUNTING BOLT SPACING AND EDGE DISTANCE

SCALE: 3"-1'-0"

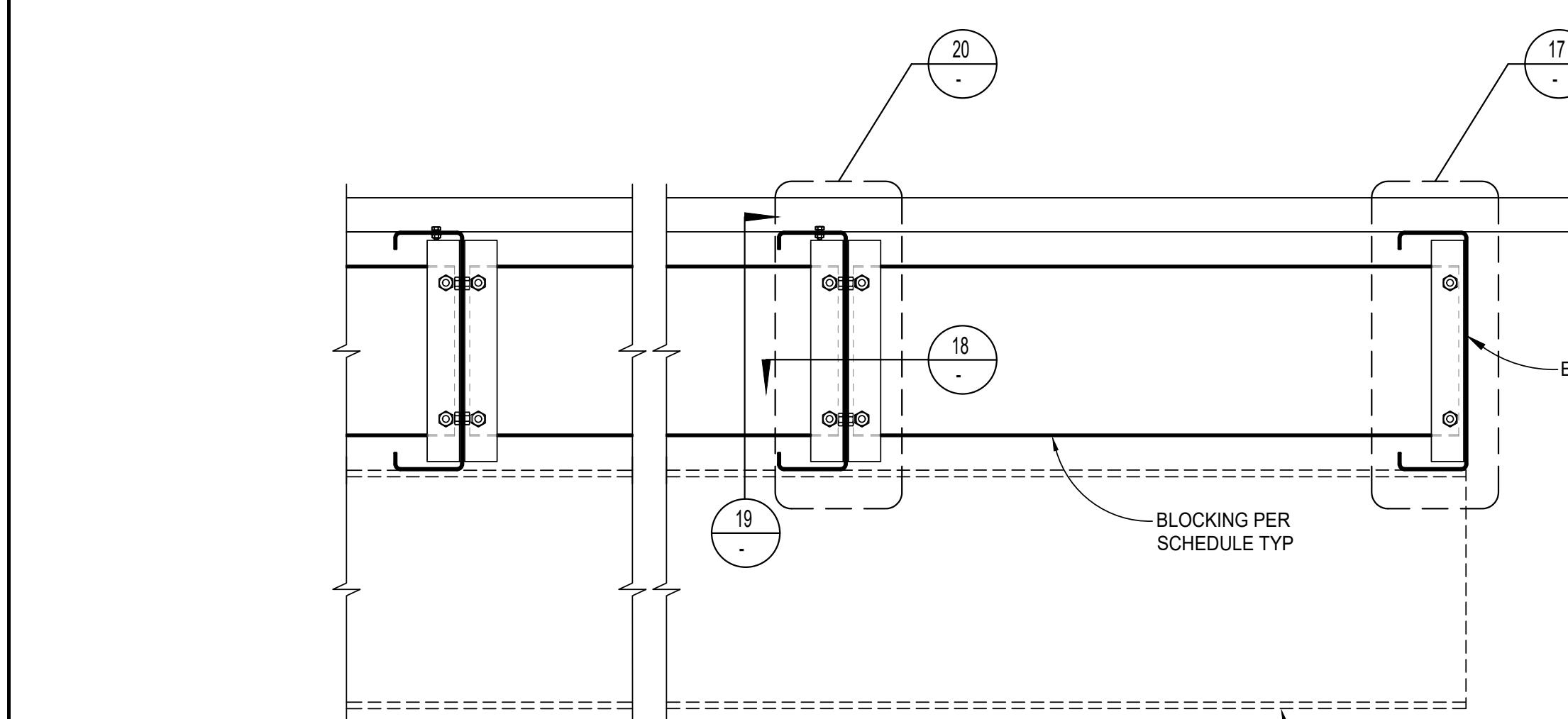


8 BEAM TO PURLIN CONN

SCALE: $\frac{1}{8}$ "=1'-0"

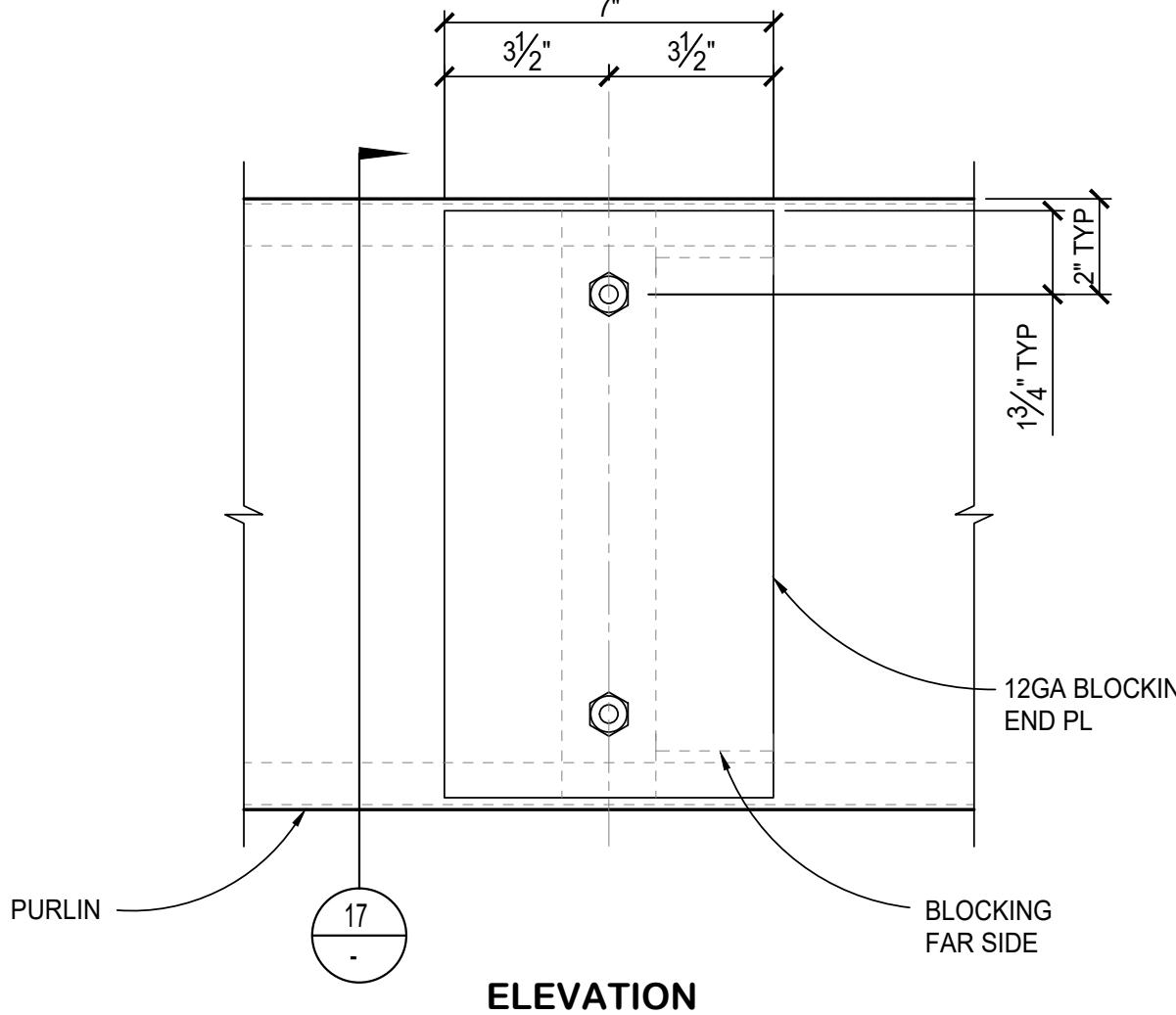
9 PURLIN FASCIA CONNECTION

SCALE: 3"-1'-0"



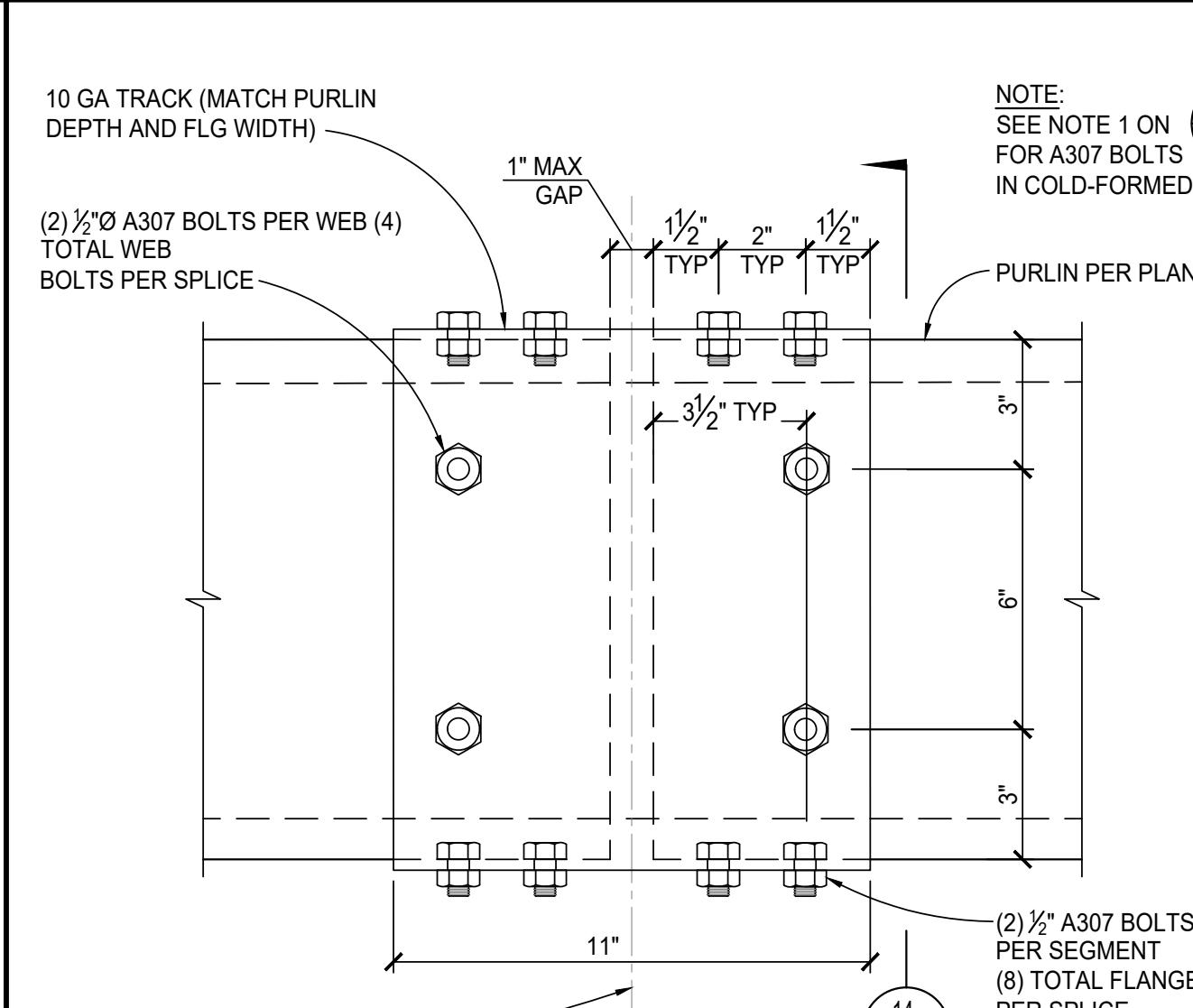
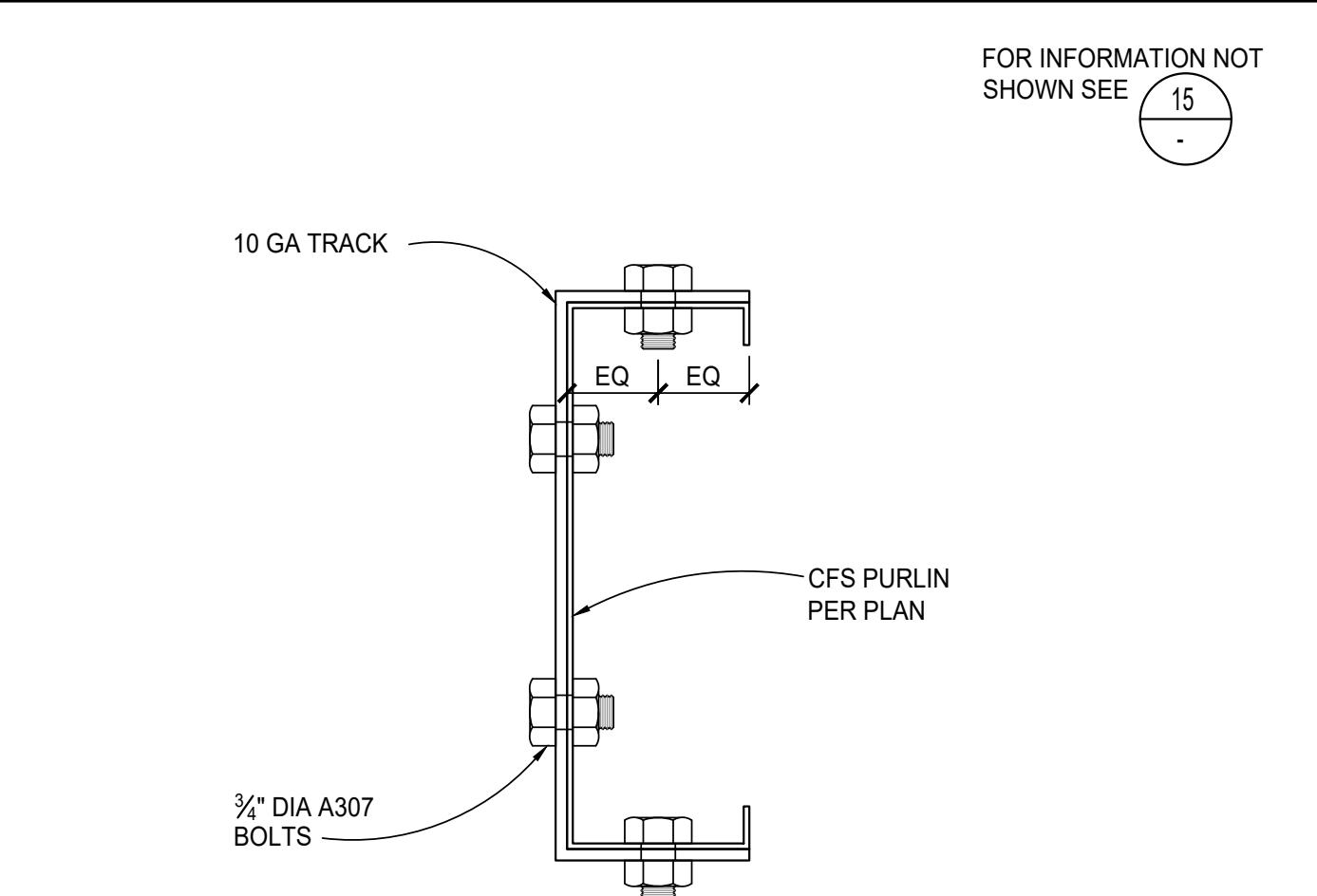
10 SHEET NOTES

SCALE: NTS



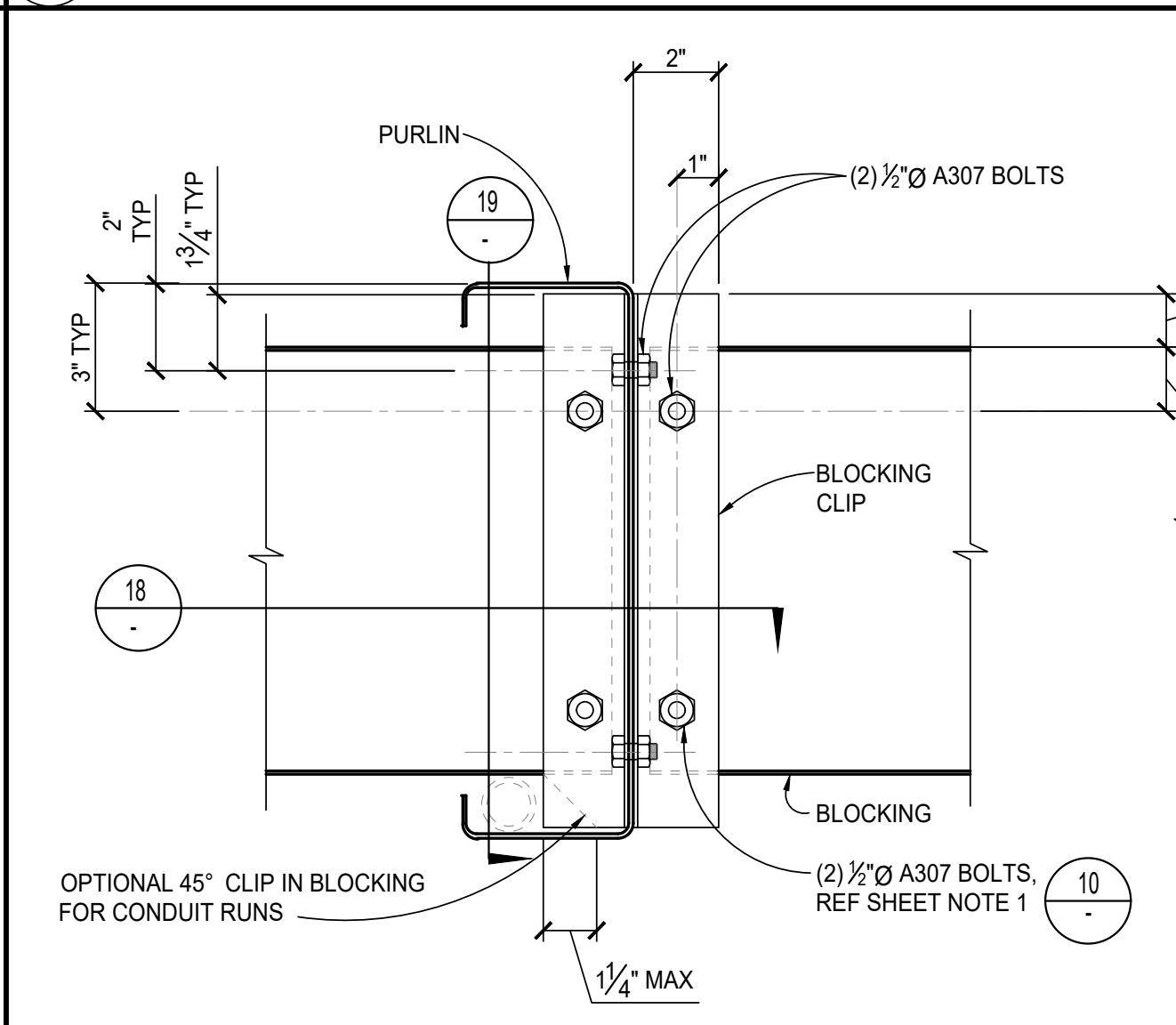
14 FIXED PURLIN SPLICE

SCALE: 3"-1'-0"



15 FIXED PURLIN SPLICE

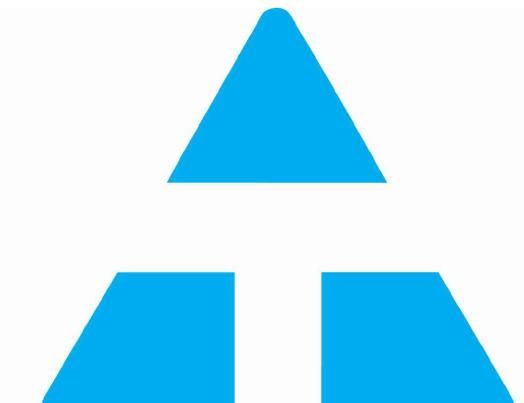
SCALE: 3"-1'-0"



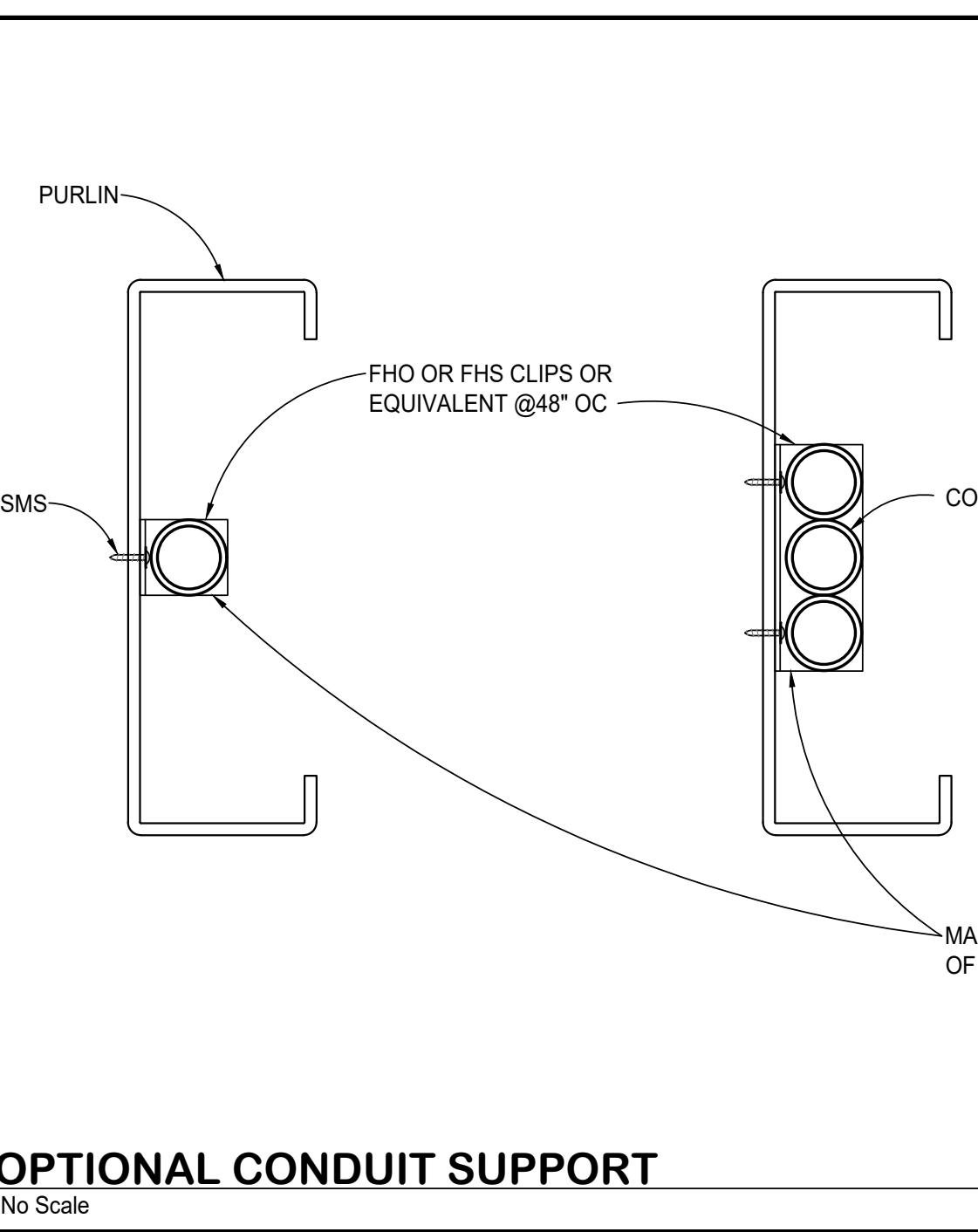
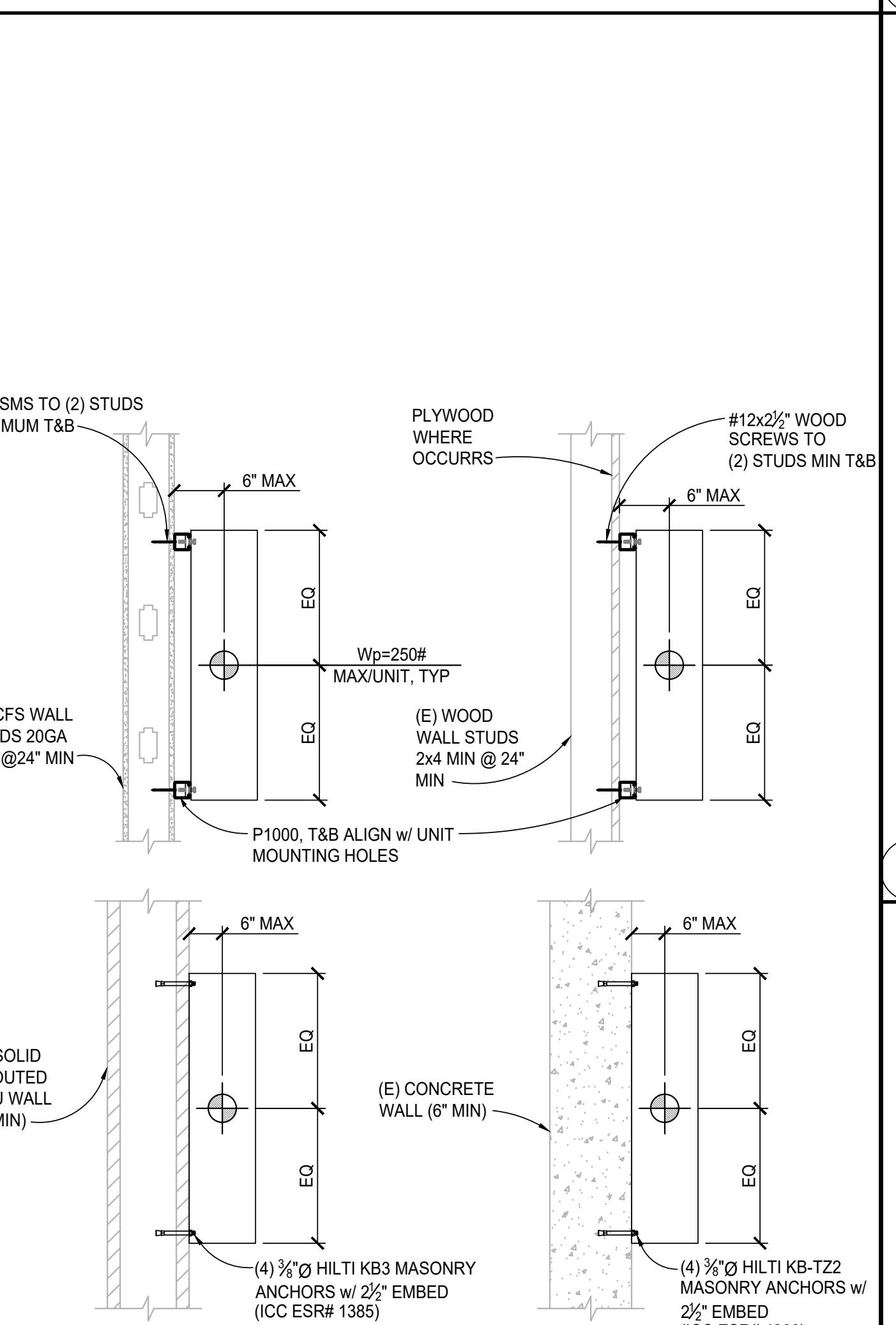
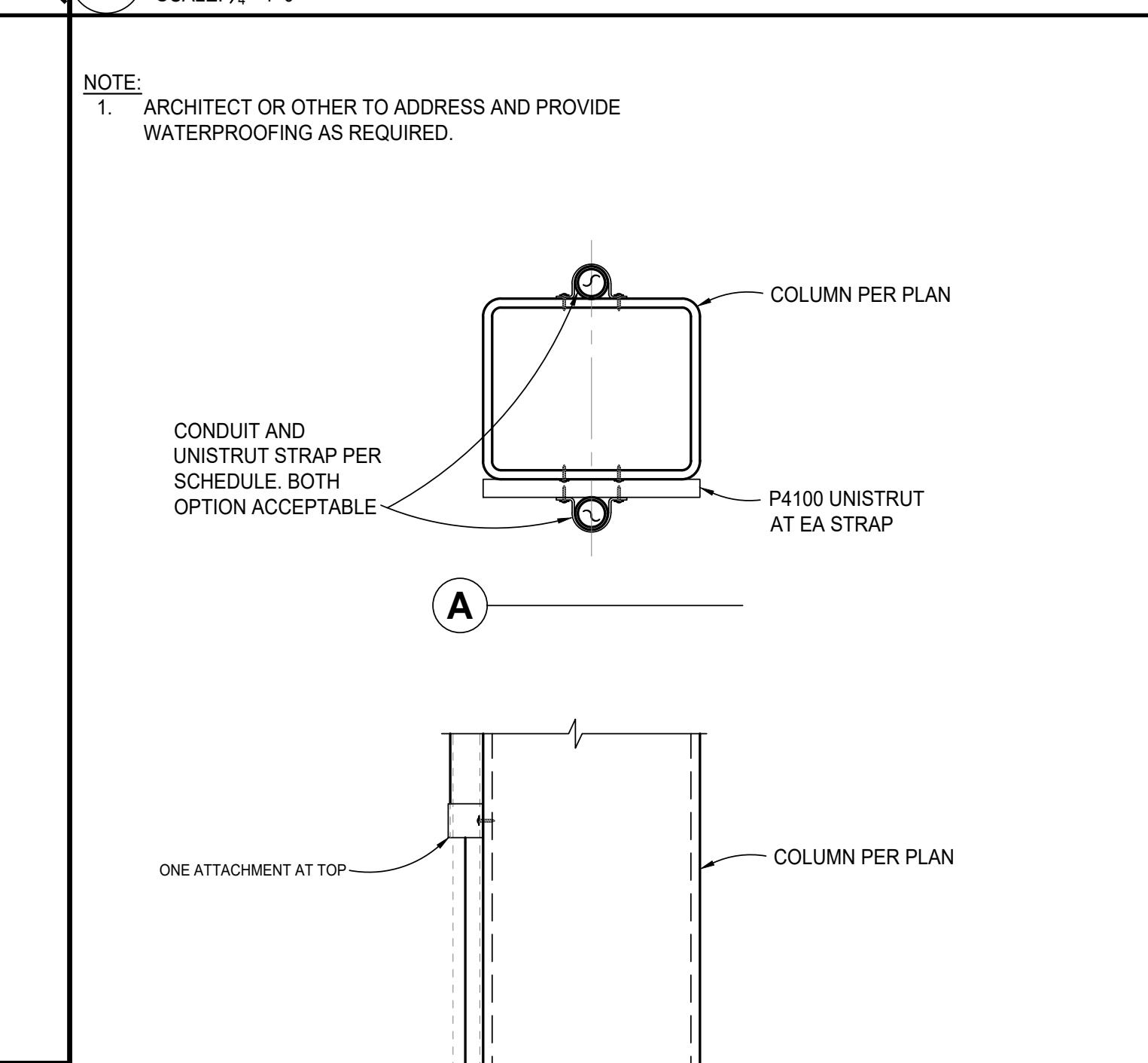
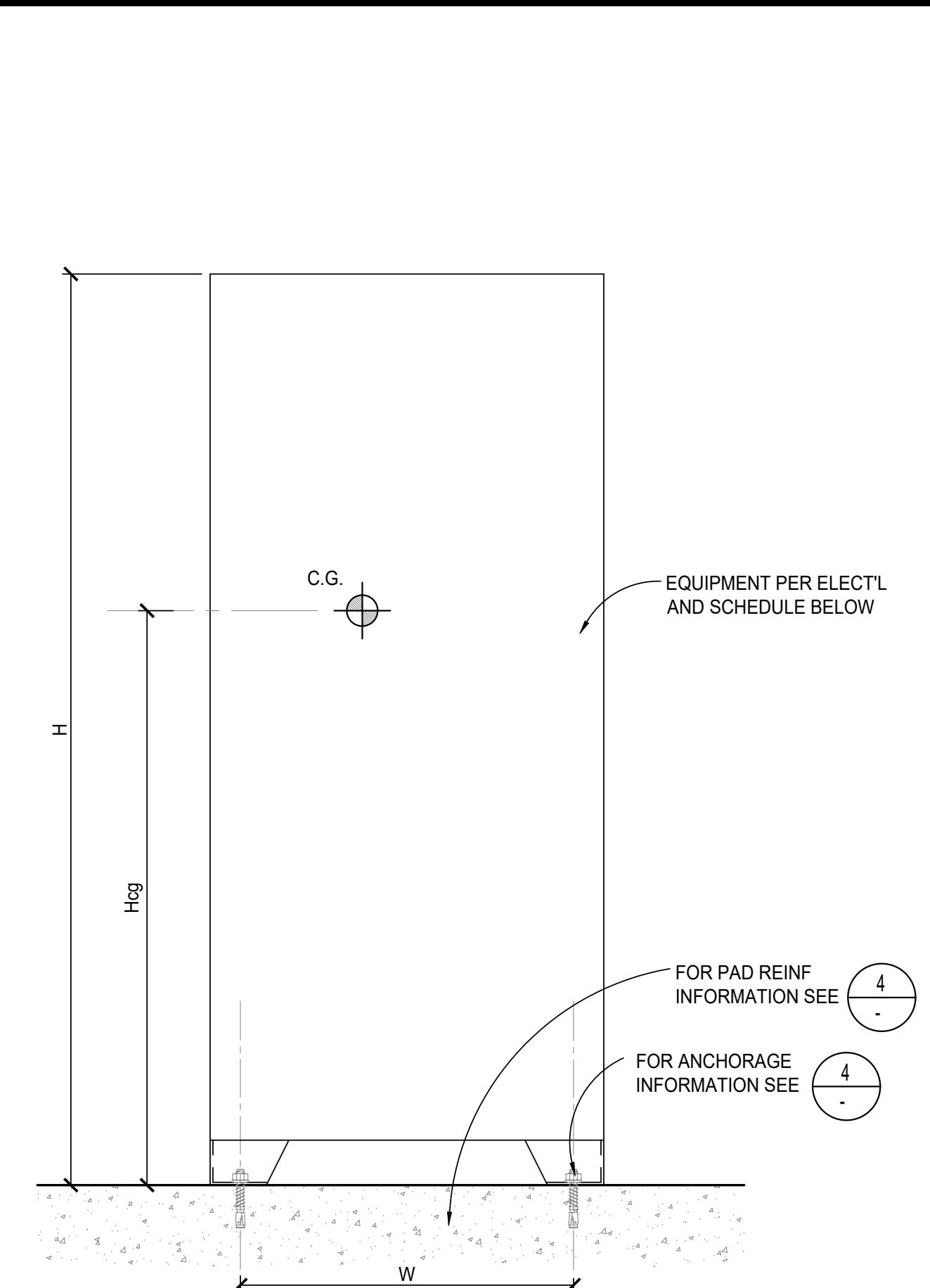
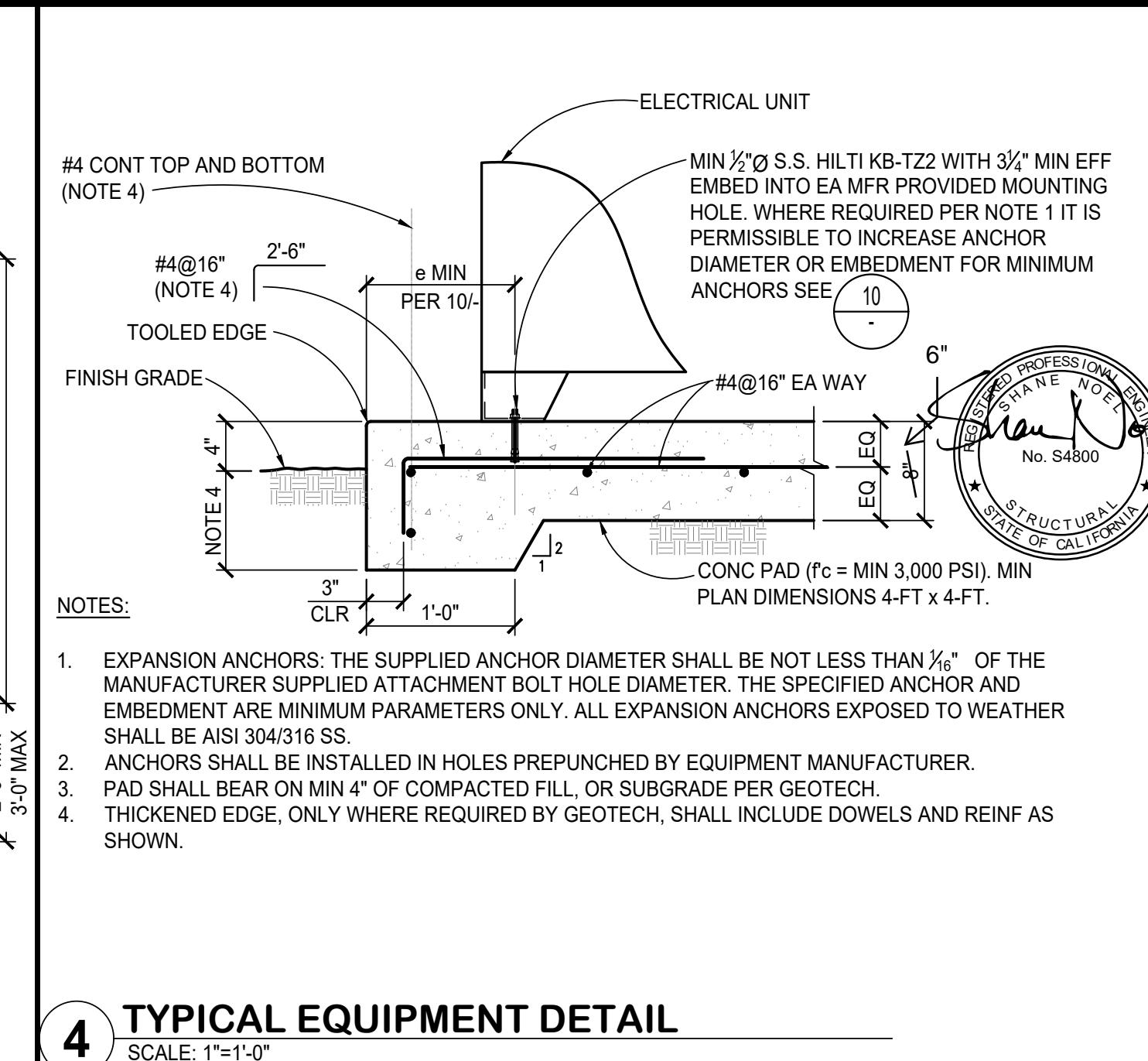
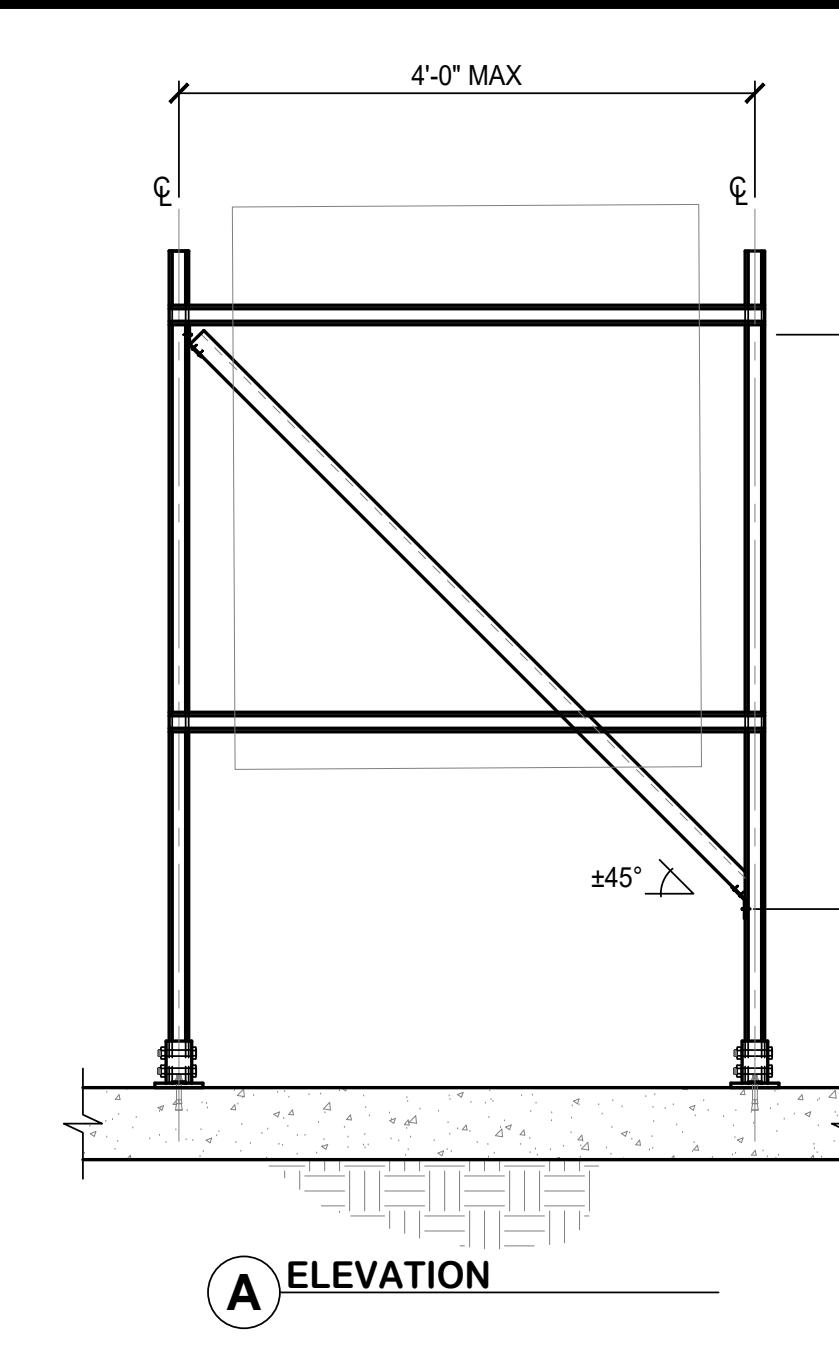
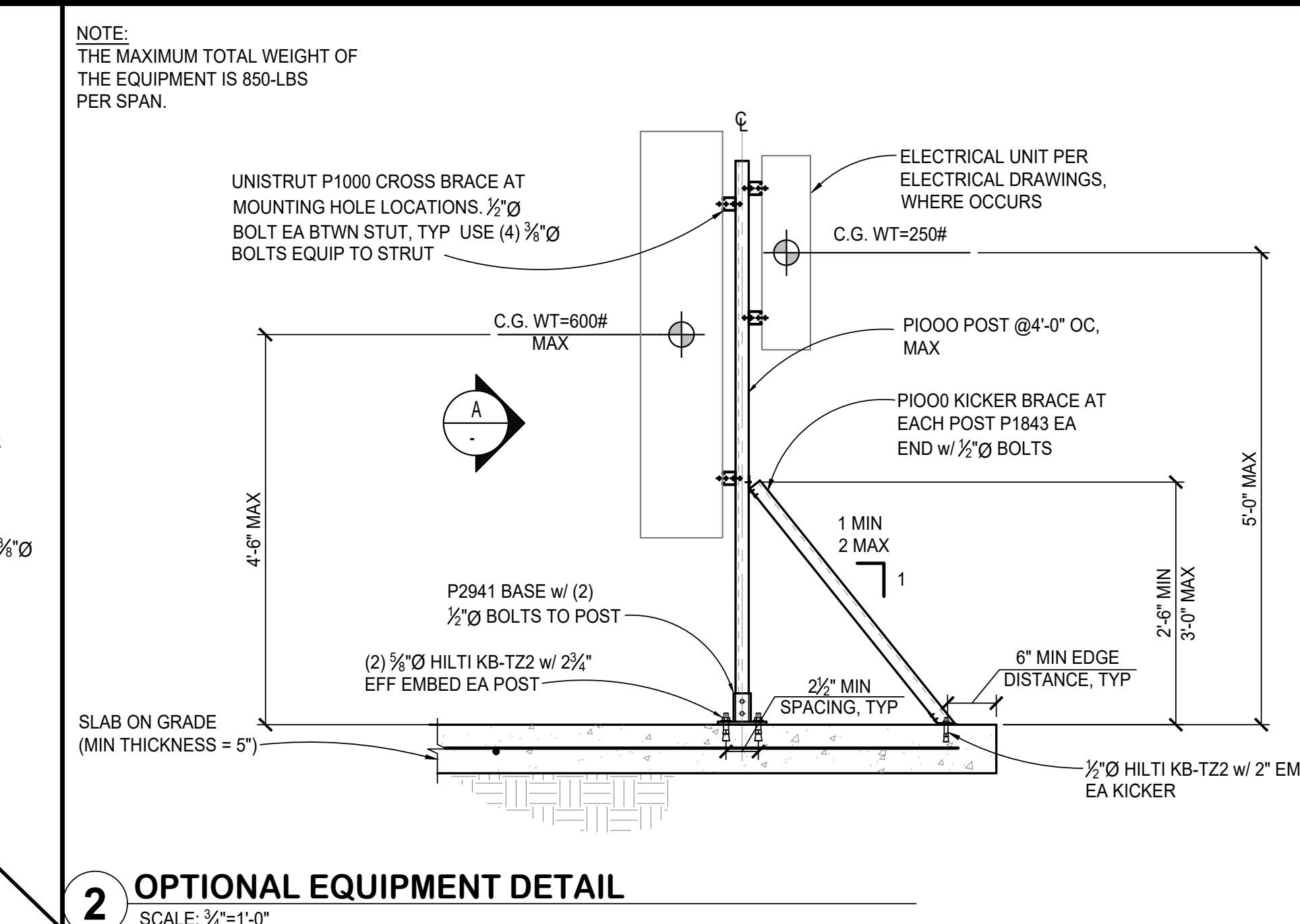
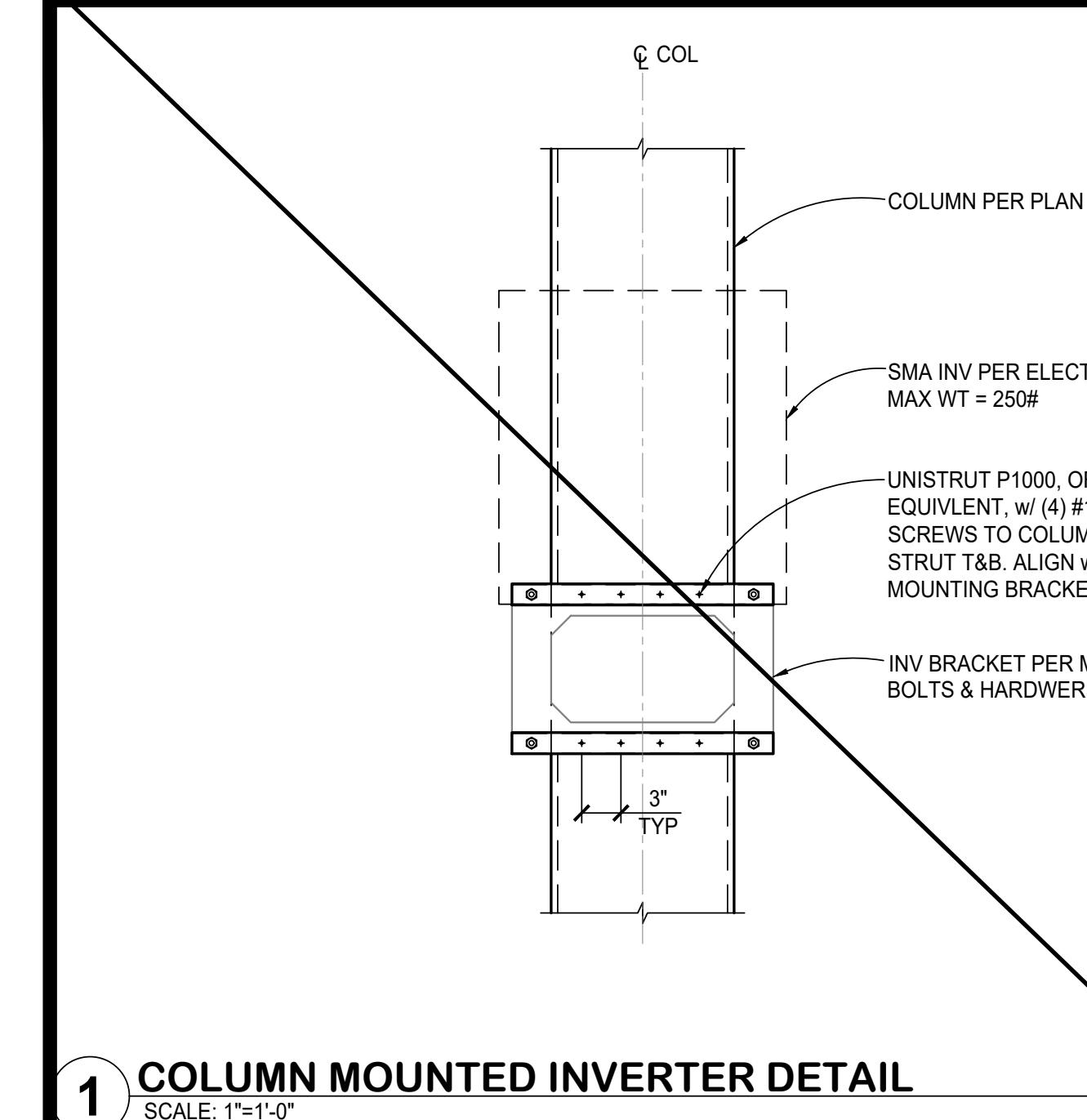
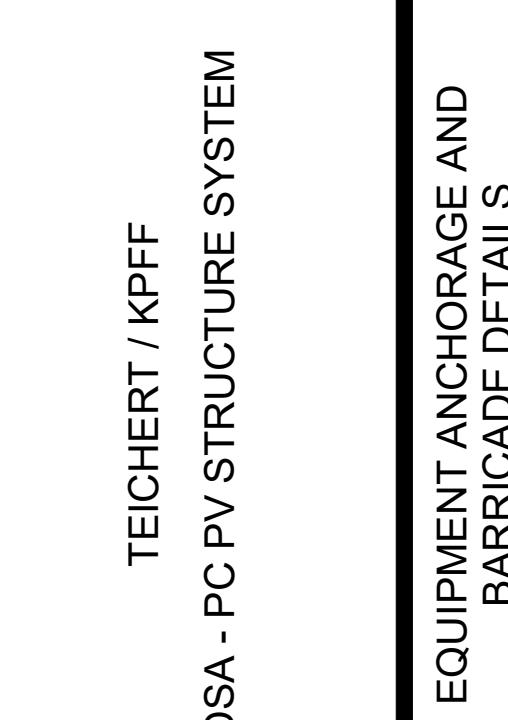
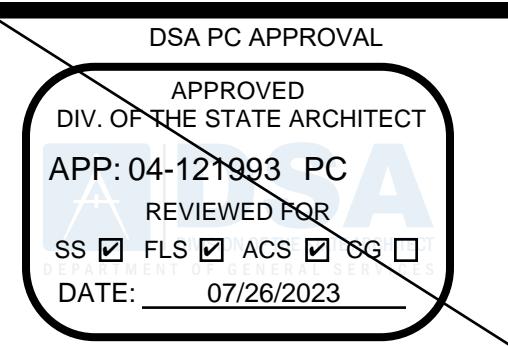
REVISION SCHEDULE	
Design No.	Description
1	FLAT REVIEW SUBMITTAL
2	07/14/2023 JUN
3	05/23/2023 JUN
4	07/11/2023 JUN
5	07/21/2023 JUN
6	VS SUBMITTAL
7	VS SUBMITTAL
8	07/21/2023 JUN

SHEET	
DATE 07/21/2023	DRAWN BY JM
0"	1"
2"	ORIGINAL SHEET SIZE 30 x 42 IF BAR IS NOT TO SCALE - DRAWING IS NOT TO SCALE

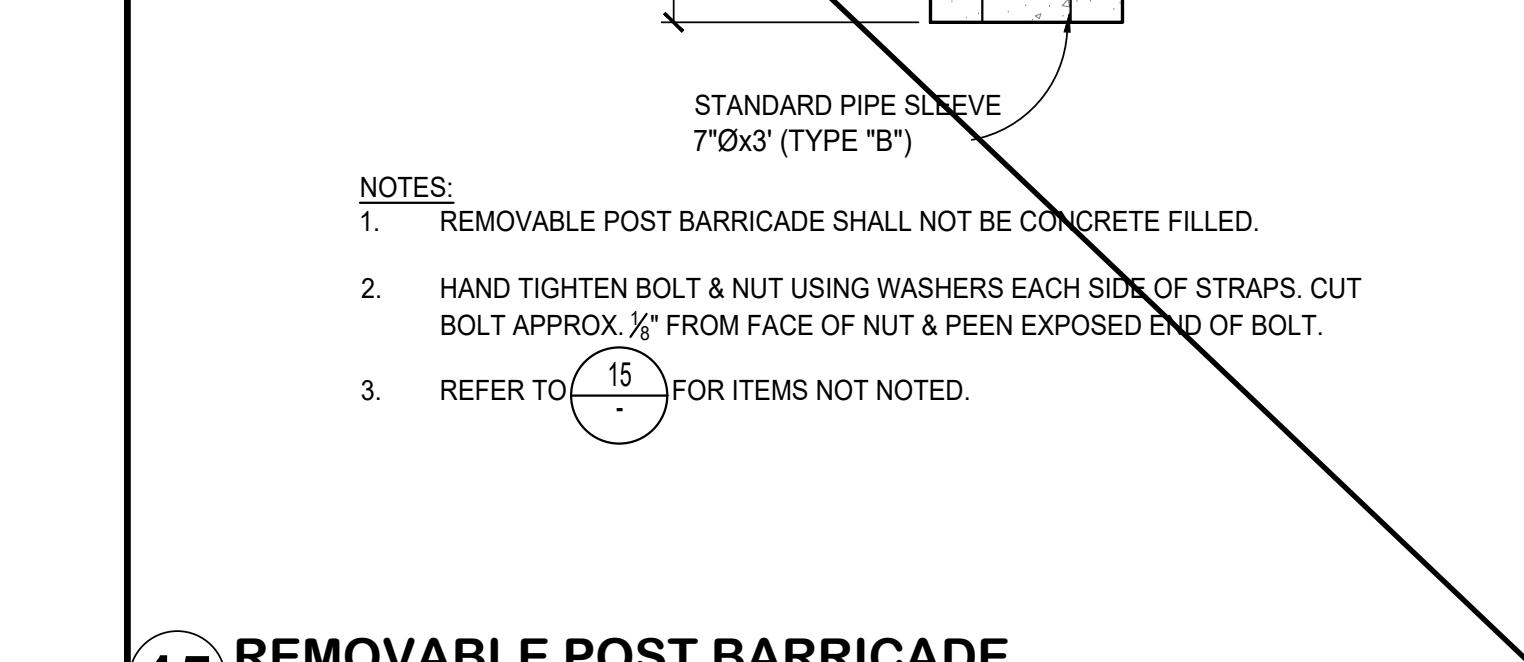
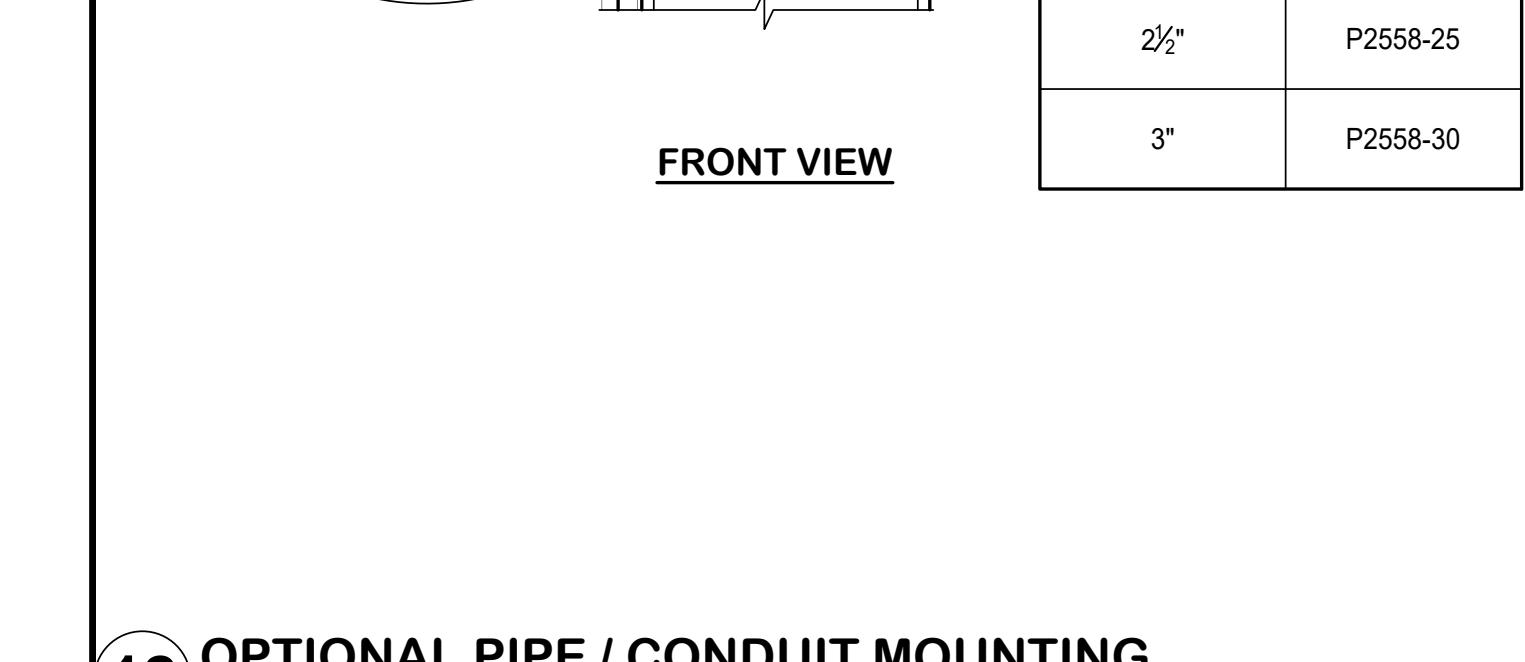
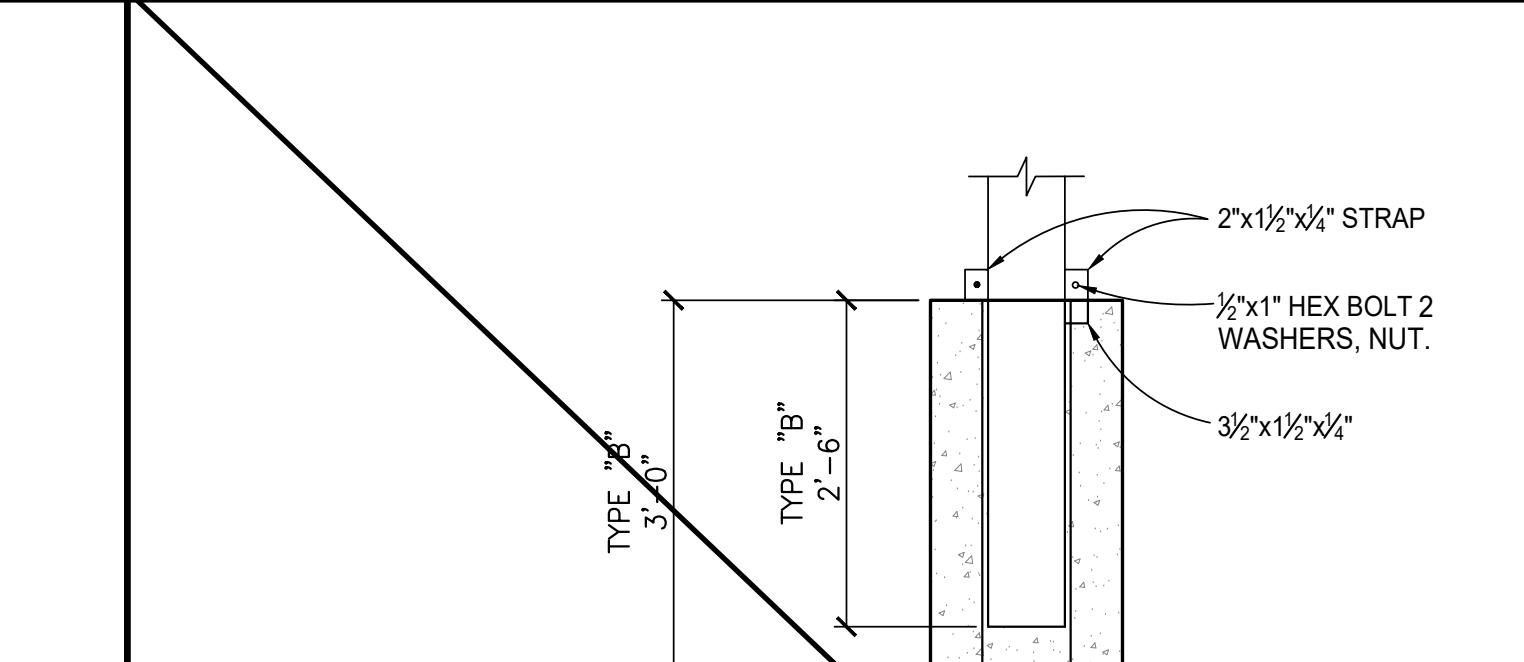
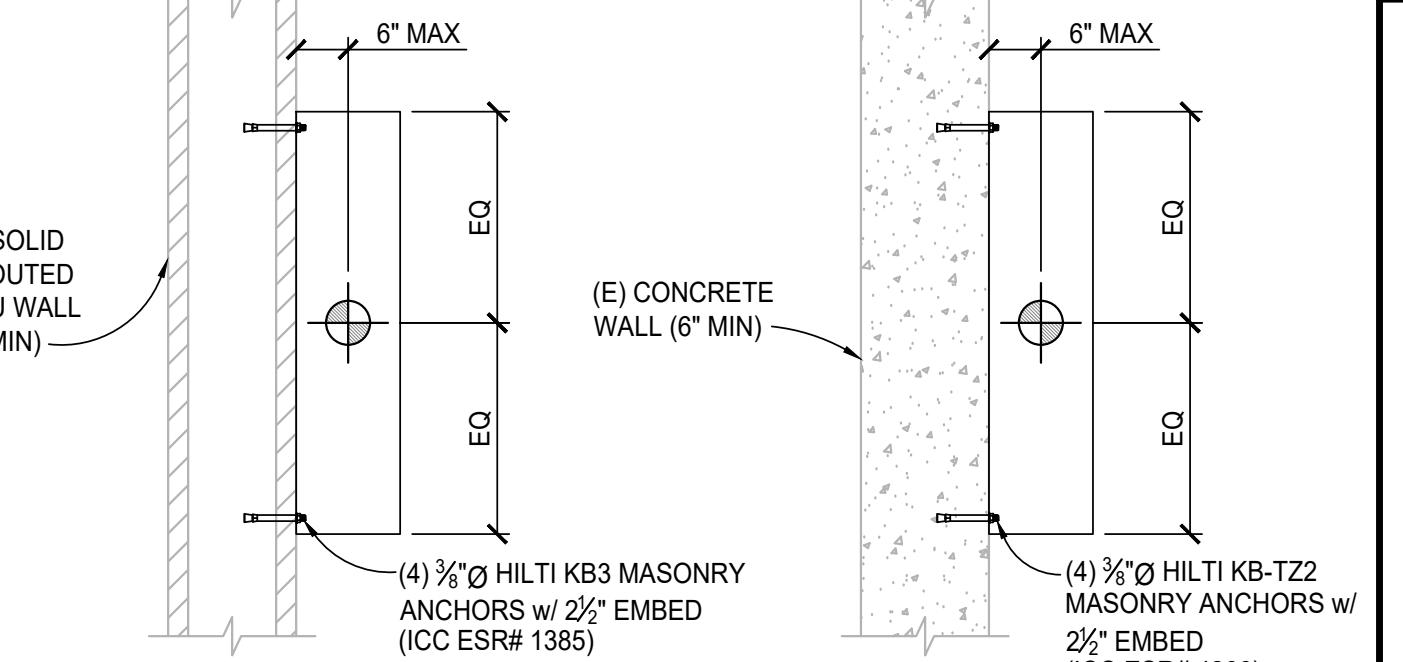
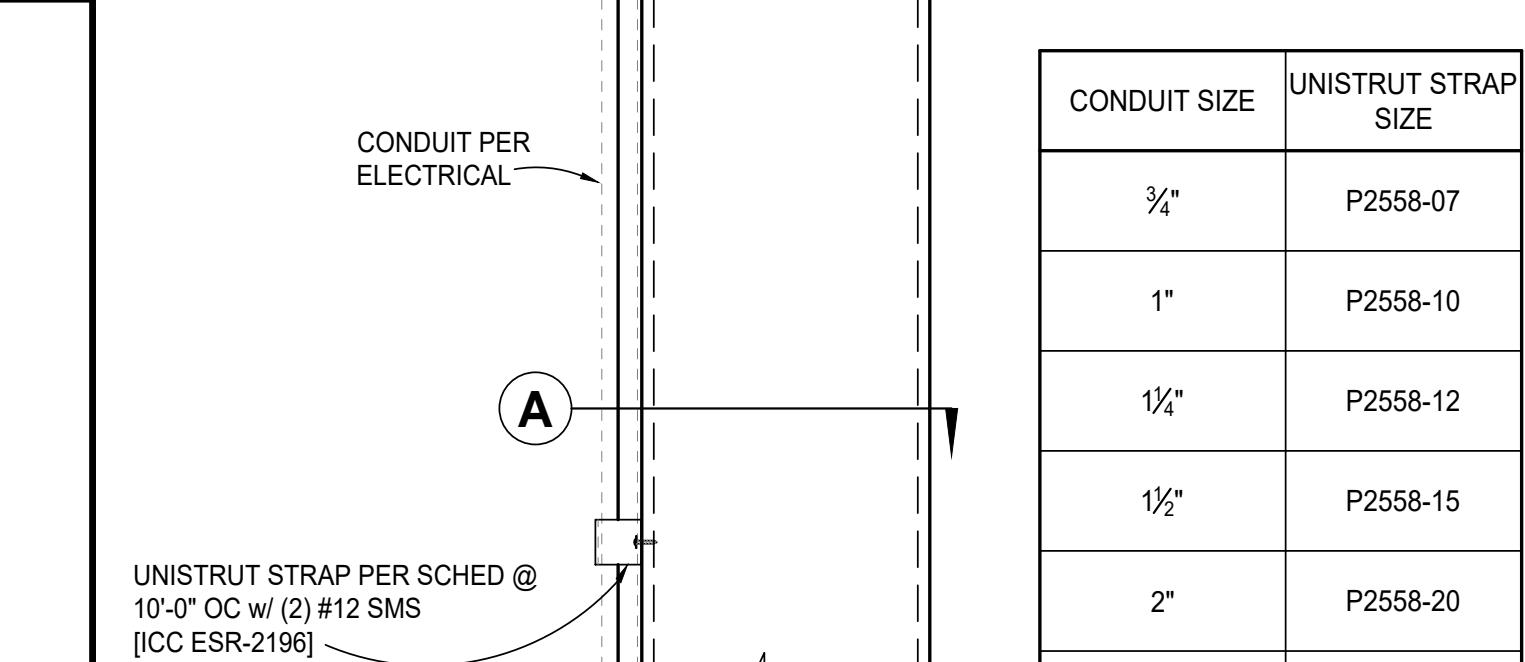
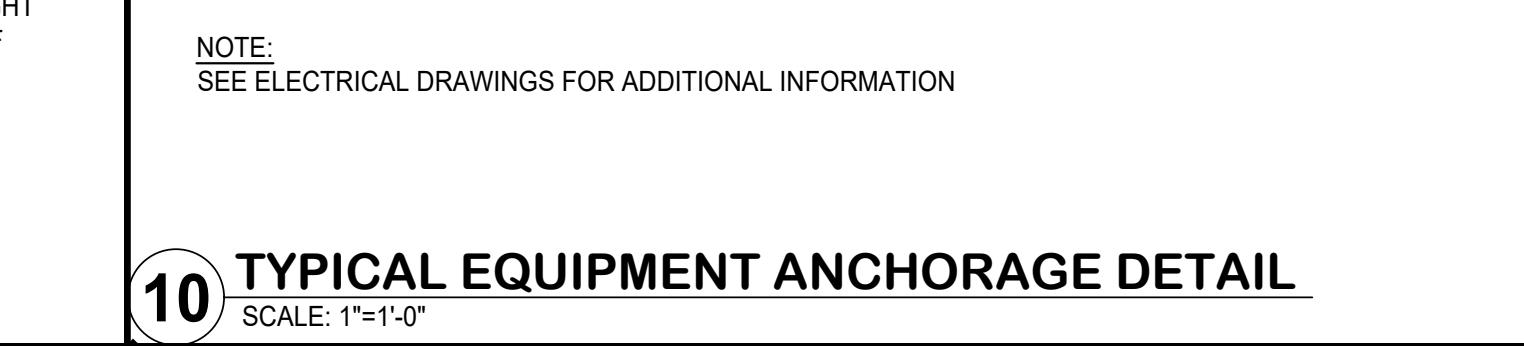
S501



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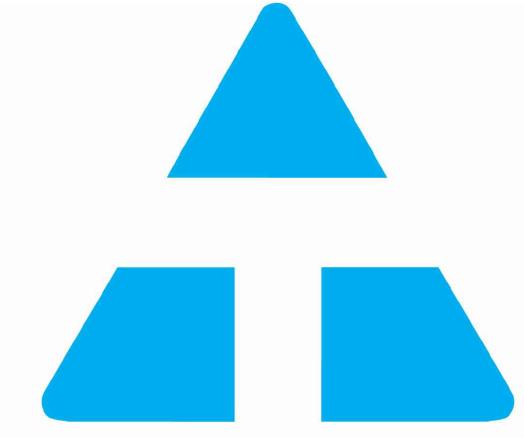
MAX WT (lb.)	H (MAX) (in)	Hg (MAX) (in)	W (MIN) (in)	LOCATION	MIN # OF ANCHORS	e (MIN) (in)
10,000	70"	35"	42"	ON GRADE	6	12"
2,000	90"	55"	24"	ON GRADE	4	8"
10,000	50"	25"	42"	ON GRADE	4	12"
3,500	90"	50"	36"	ON GRADE	4	12"



No.	Design No.	Description	Date	DB	CB	CB
			02/14/2023	JUL	SIN	SIN
1		FLAR/REVIEW SUBMITTAL	05/23/2023	JUL	SIN	SIN
2		V2 SUBMITTAL	07/11/2023	JUL	SIN	SIN
3		V3 SUBMITTAL	07/21/2023	JUL	SIN	SIN

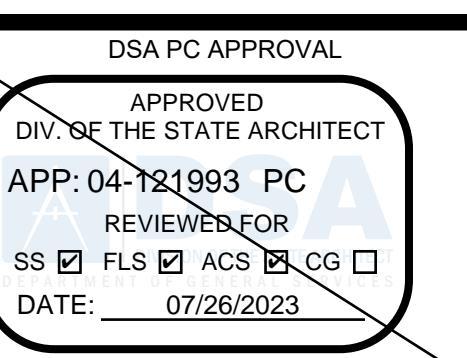
No.	Date	DRAWN BY	
		JM	JM
	07/21/2023		
ORIGINAL SHEET SIZE 30 x 42 IF BAR IS NOT TO SCALE - DRAWING IS NOT TO SCALE			

S600



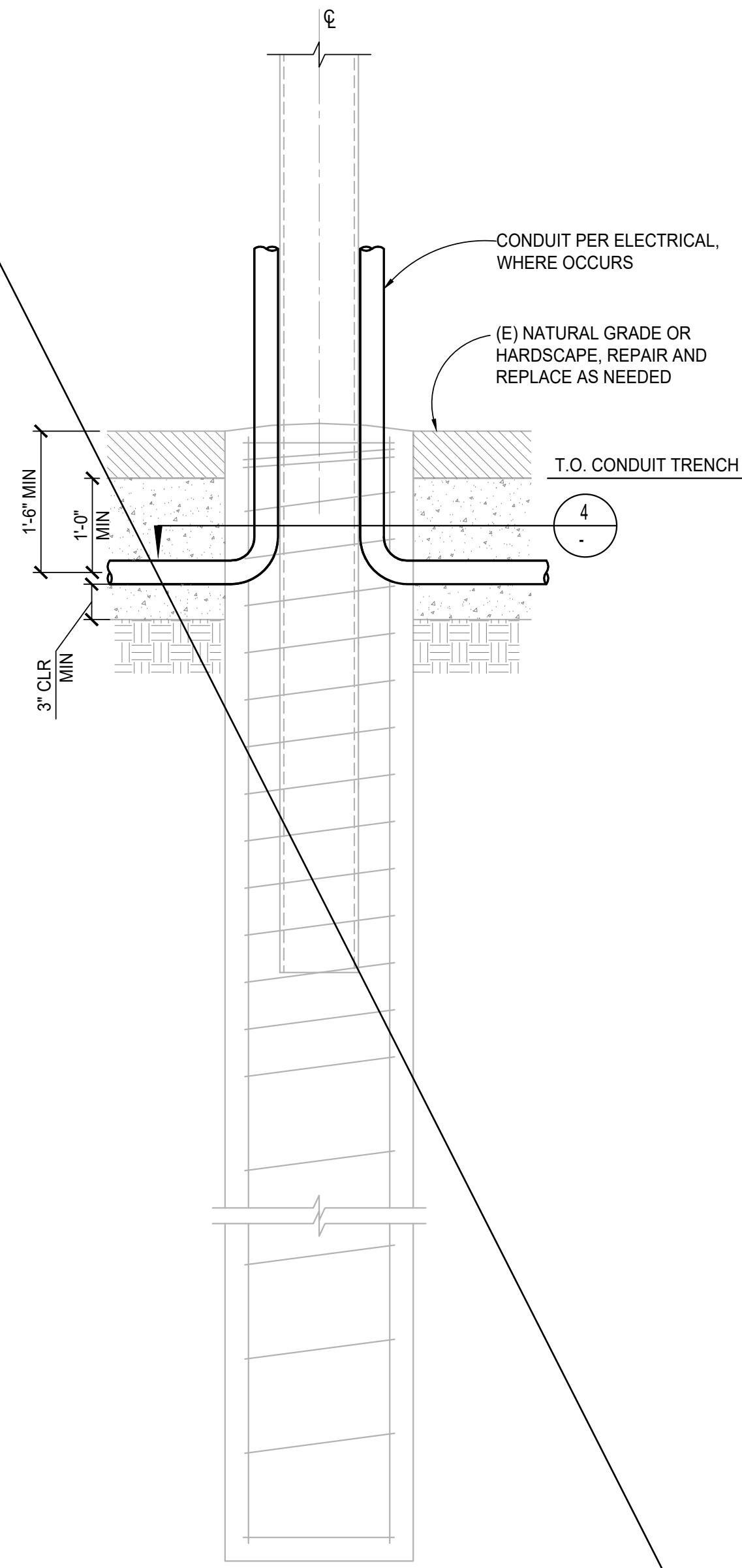
kpff

3131 Camino Del Rio North, Suite 1080
San Diego, California 92108
(619) 521-8500 Fax (619) 521-8591
www.kpff.com kpff project #2200358



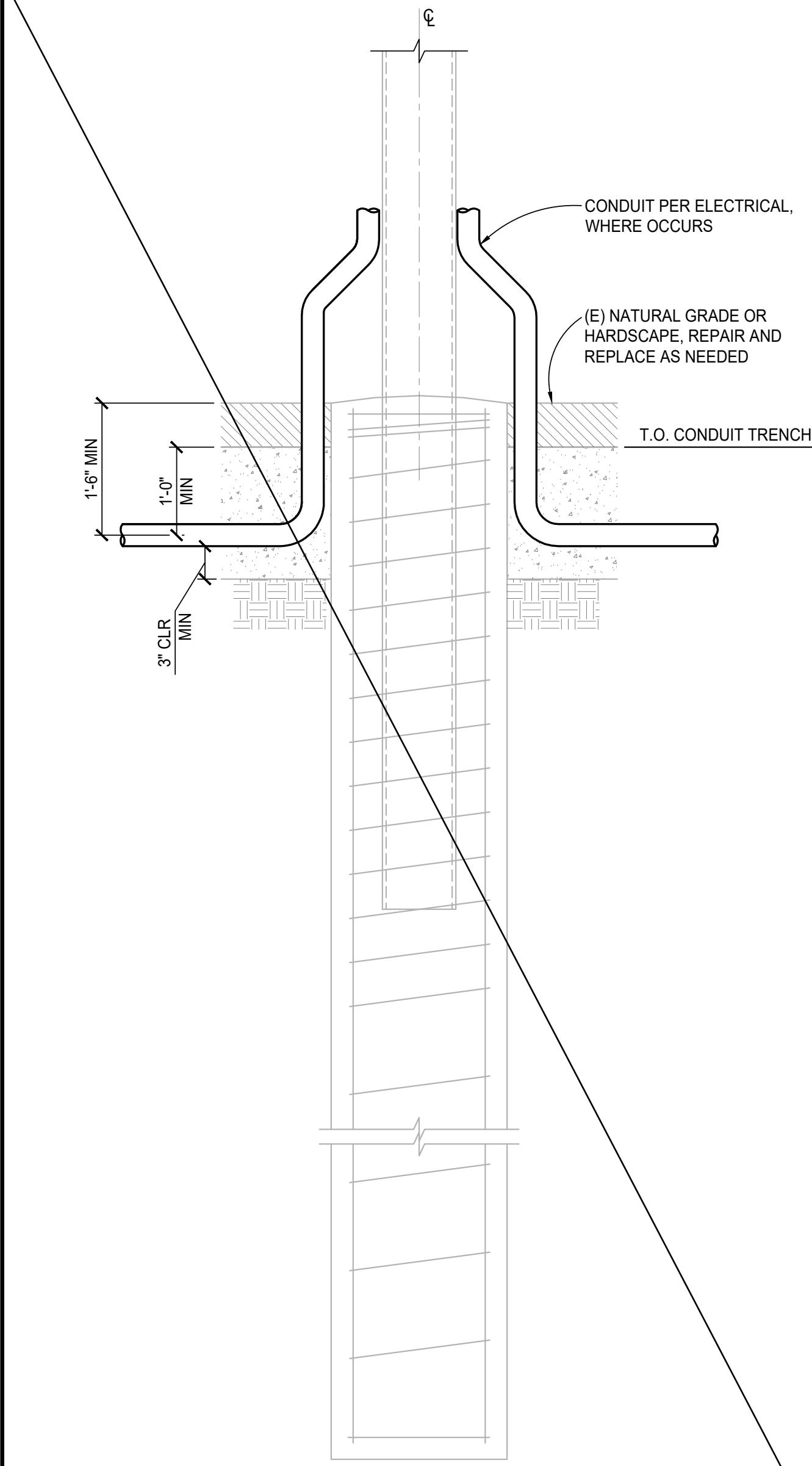
TEICHERT / KPFF
DSA - PC PV STRUCTURE SYSTEM

CONDUITS ROUTING & BOLLARDS



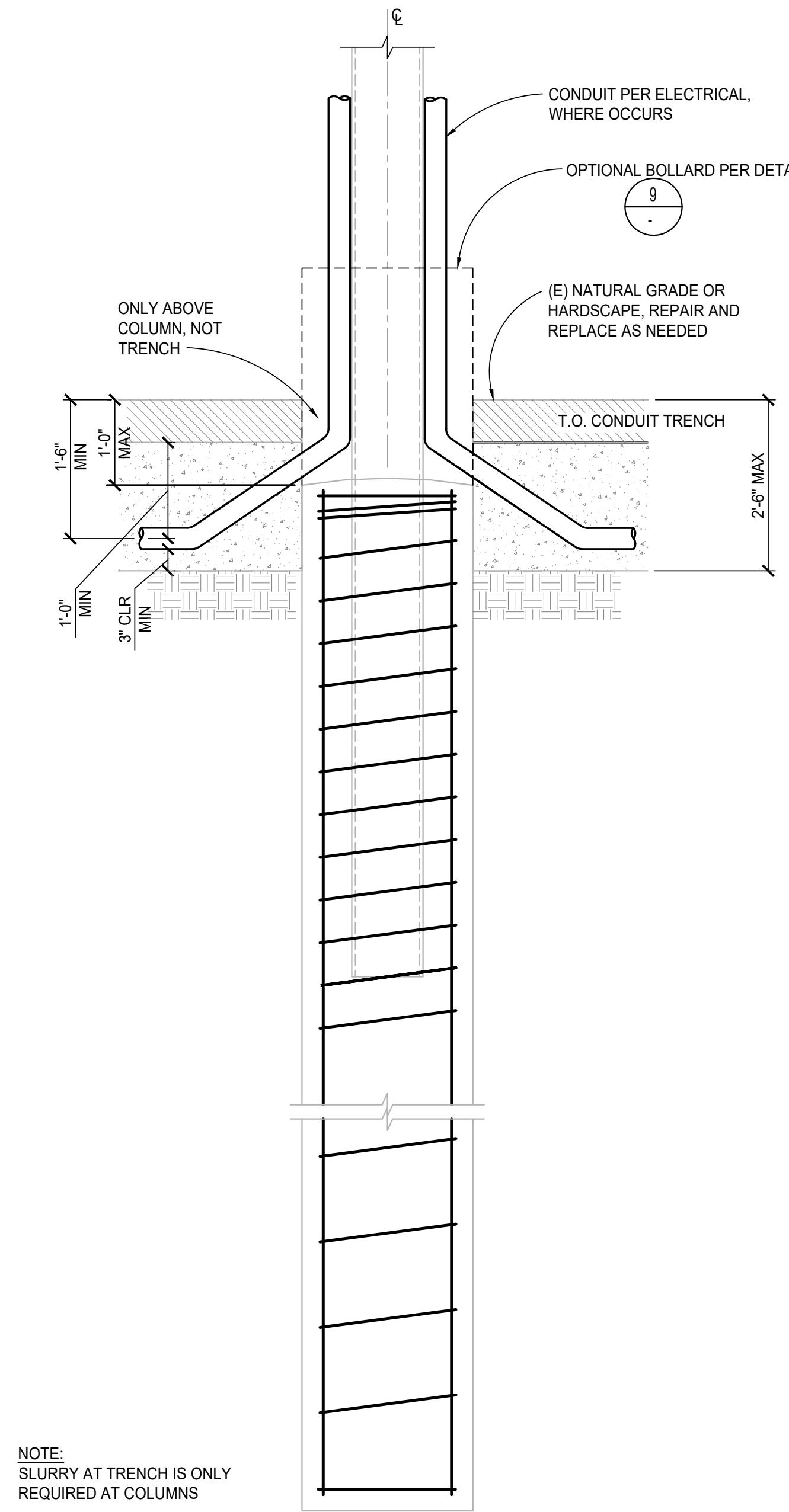
6 CONDUIT ROUTING IN PIER

SCALE: $1\frac{1}{2}''=1'-0''$



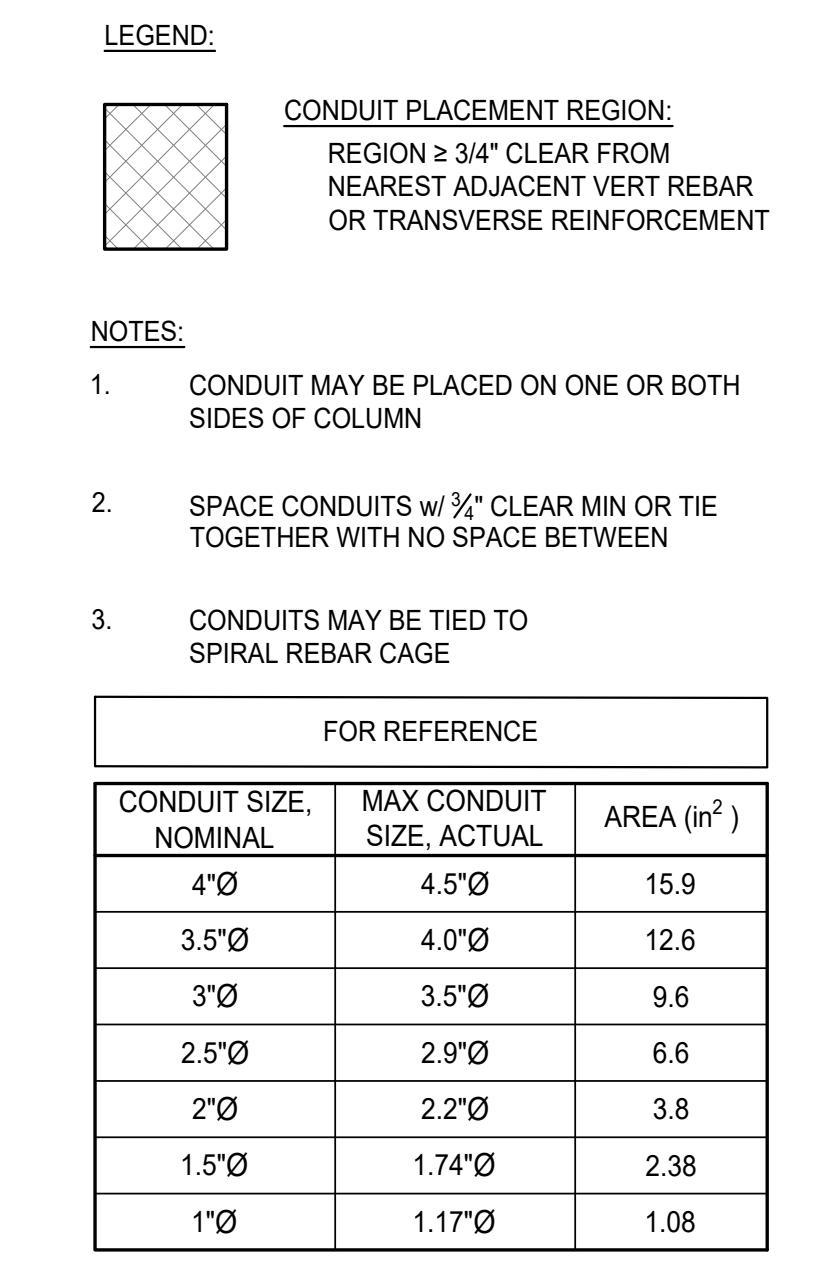
7 OPTIONAL CONDUIT ROUTING

SCALE: $1\frac{1}{2}''=1'-0''$



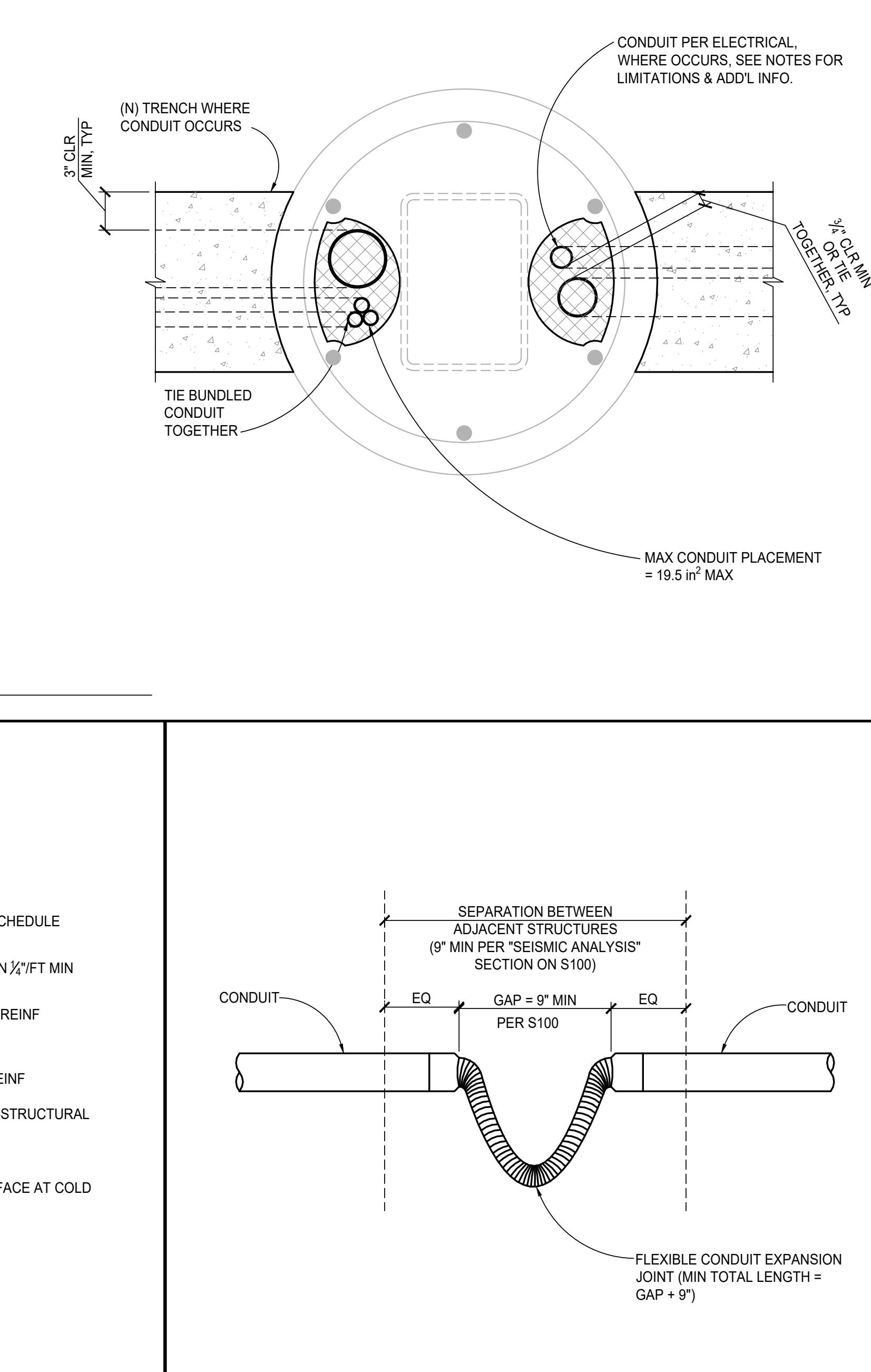
8 ALTERNATE CONDUIT ROUTING

SCALE: $1\frac{1}{2}''=1'-0''$



4 CONDUIT LAYOUT IN CONCRETE PIER

SCALE: $1\frac{1}{2}''=1'-0''$



9 BOLLARD - PIER / EMBEDDED COLUMN - TIES

SCALE: $1\frac{1}{2}''=1'-0''$

10 CONDUIT EXPANSION JOINT BETWEEN STRUCTURES

SCALE: N.T.S.

X (MAX)	# STRAPS
3'-0"	(1) EA SIDE MIN
5'-0"	(2) EA SIDE MIN

NOTE:
SLURRY AT TRENCH IS ONLY
REQUIRED AT COLUMNS

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6 CONDUIT ROUTING IN PIER

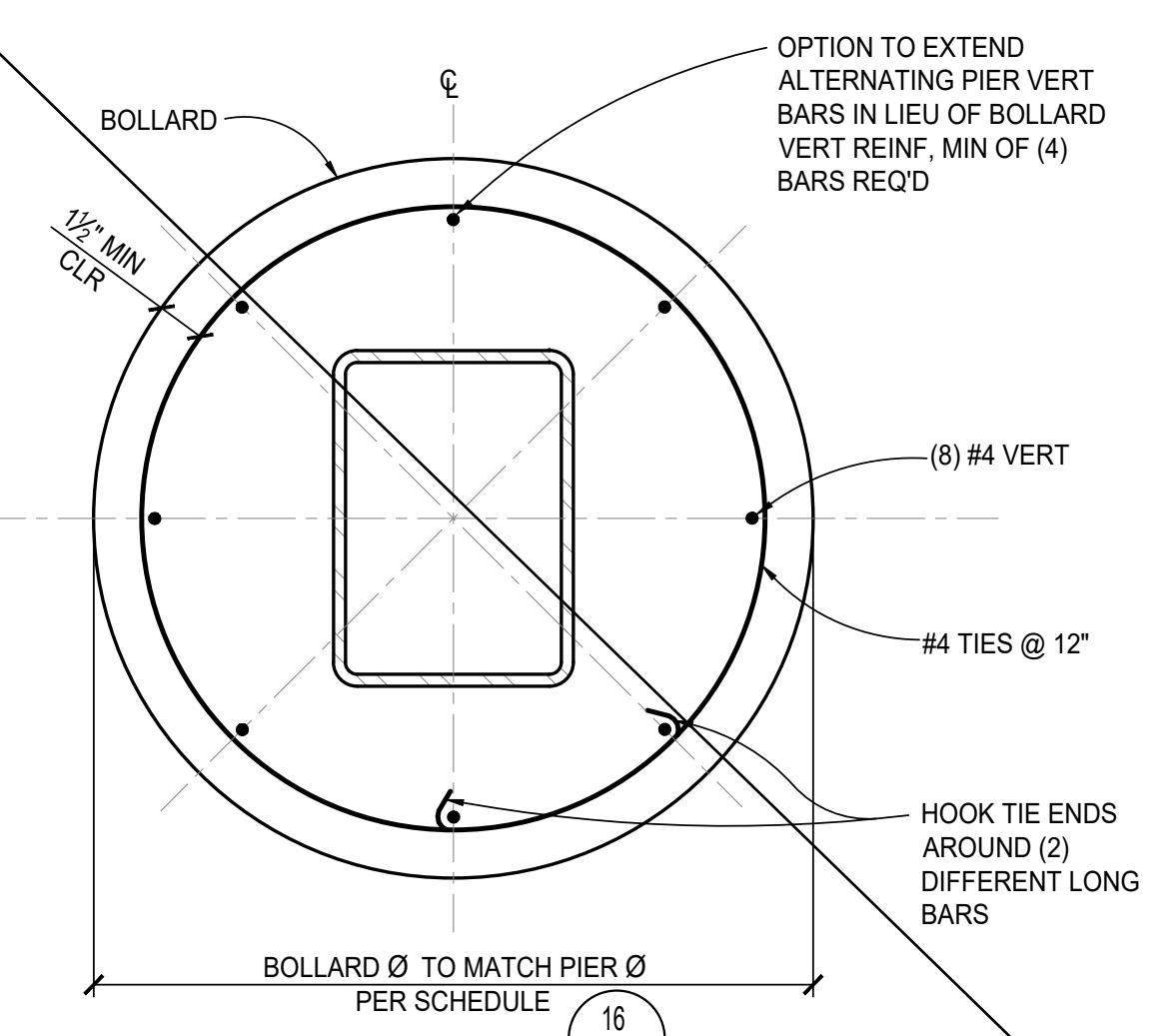
SCALE: $1\frac{1}{2}''=1'-0''$

7 OPTIONAL CONDUIT ROUTING

SCALE: $1\frac{1}{2}''=1'-0''$

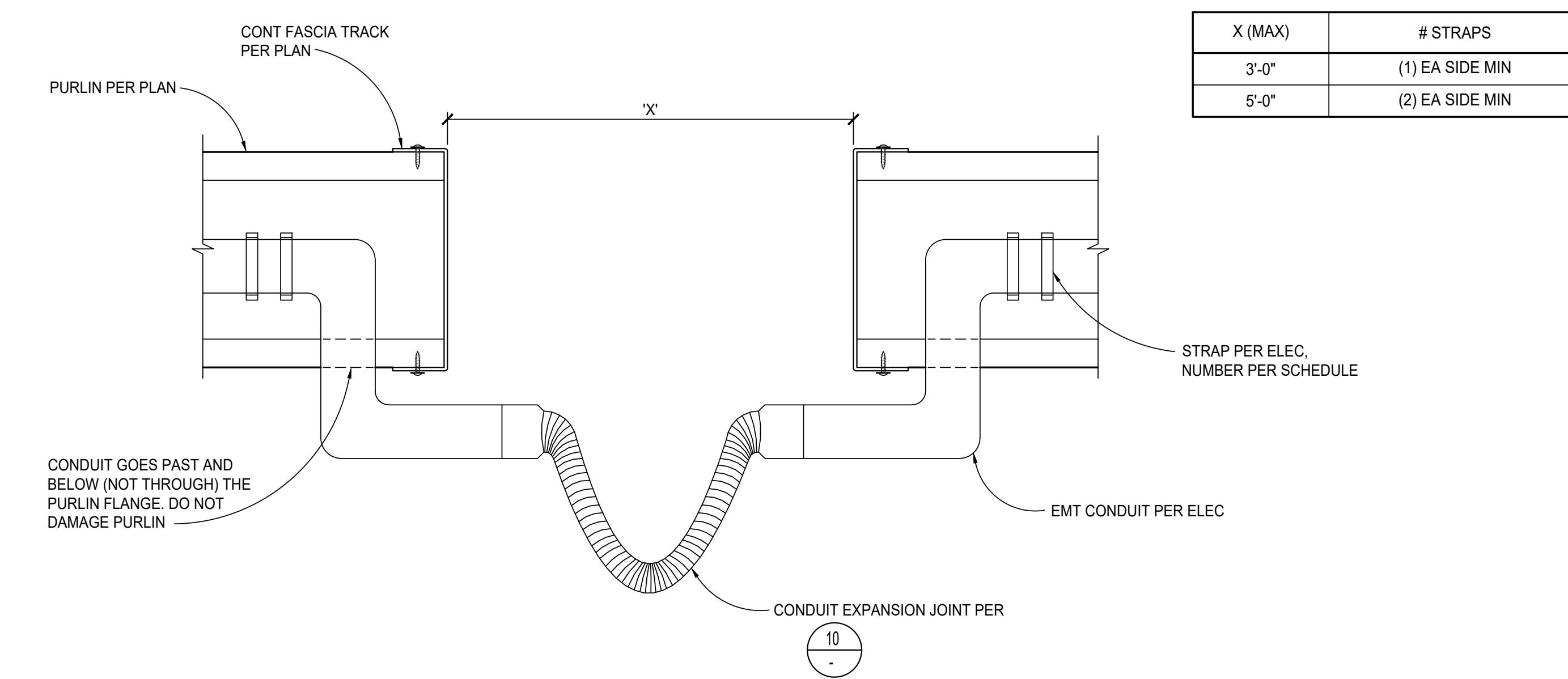
8 ALTERNATE CONDUIT ROUTING

SCALE: $1\frac{1}{2}''=1'-0''$



11 OPTIONAL NON-STRUCTURAL BOLLARD DETAIL

SCALE: $1\frac{1}{2}''=1'-0''$

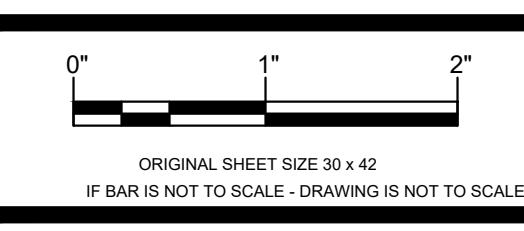


14 CONDUIT EXPANSION JOINT BELOW FASCIA

SCALE: N.T.S.

REVISION SCHEDULE	
Design No. - Description	Date
FLA/AR/REVIEW SUBMITTAL	02/14/2023
V2 SUBMITTAL	05/23/2023
V3 SUBMITTAL	07/11/2023
V4 SUBMITTAL	07/21/2023

DATE 07/21/2023
DRAWN BY JM



SHEET S602