
TO ALL BIDDERS

ADDENDUM NO. 2

Date: March 3, 2010
Project: 401 S. Tustin Street
Project No.: 100-042-042-042-P210-4200

The following changes, additions, and/or clarifications shall be made to the specifications and drawings for the work of the project referenced above.

This addendum forms a part of the Contract Documents and in case of a conflict between drawings, specifications, and this addendum, this addendum shall govern.

CLARIFICATIONS

1. Furniture plans and furniture specifications are for reference only and not included in the contract for construction.

SPECIFICATIONS

1. Cover Sheet/Title Page
 - A. County Representative – Revise e-mail address to: "Email: steve.johsz@ocpw.ocgov.com."
2. General Conditions
 - A. Clause 28 – Delete Paragraph J in its entirety.
3. Section 01001
 - A. Electrical Drawings – Add Sheet numbers E-01.1 Photovoltaic PV Power System Details and E-2.1.5 Photovoltaic Roof Plan and Details to listing.
4. Section 02085
 - A. Paragraph 02085.1.07 – Revise section reference in last sentence to read "Section 1.24."
 - B. Paragraph 02085.1.09 – Revise section reference in last sentence to read "Section 1.24."
5. Section 02225
 - A. Paragraph 02225.3.01 – Add the following:

"G. Fifty percent (50%) of all demolition waste shall be recycled."

6. Section 11450

A. Replace Section 11450 – Residential Equipment in its entirety with new Section 11450 – Residential Equipment. See attached Section 11450.

7. Section 16300

A. Add new Section 16300 – Photovoltaic (PV) Electric Power System. See attached Section 16300.

DRAWINGS

1. Sheet C-1

A. Special Inspection Program form added. See attached revised Sheet C-1.

2. Sheet C-2

A. Add ramp at Maintenance Building. See attached revised Sheet C-2.

B. Revised grades at entry to Electrical Room and parking area. See attached revised Sheet C-2.

C. Revised Grades at new Electrical Enclosure next to Trash Enclosure. See attached revised Sheet C-2.

3. Sheet C-3

A. Revised retaining wall and fence details. See attached revised Sheet C-3.

4. Sheet L-1

A. Construction Note 9 – Delete "Furnish and install 6.5 ft. long precast concrete park bench with back and armrest. Model: Adenville-Q1AV78B (SRC/C2-T7/STD); Manufacturer : Quick Crete (951) 737-6240." Add " Furnish and install three (3) chairs in lieu of each bench specified on Sheet L-1 and Keynote A-1.1/77. Model: WS-137/C-10; Manufacturer: Wausau Select (800) 388-8728."

5. Sheet T-2

A. Electrical Drawings – Add Sheet numbers E-01.1 Photovoltaic PV Power System Details and E-2.1.5 Photovoltaic Roof Plan and Details to listing. See attached revised Sheet T-2.

6. Sheet A-0.4

A. Revise Curb Ramp Detail number from "1" to "7."

B. Detail 23 – Tactile Exit Signage. Add Note "D." – "EXIT ROUTE".

7. Sheet A-0.5
 - A. Detail 21 – Tactile Exit Signage. Delete Detail in its entirety.
8. Sheet A-1.1
 - A. Add Keynotes 89, 90 and 91 and miscellaneous minor revisions. See attached revised Sheet A-1.1.
9. Sheet A-1.2
 - A. Revise Detail 23 – Skate Board Stop Plan, add Detail 27 – Cast-in-Place Concrete Bench, and delete Detail 28 – Drainage Grate. See attached revised Sheet A-1.2.
10. Sheet A-2.1.1
 - A. Revise Keynotes 31 and 38. Add Keynote 40 and miscellaneous minor revisions. See attached revised Sheet A-2.1.1
11. Sheet A-2.1.2
 - A. Revise Keynote 12 – Detail reference to read: "See Detail 27/A-7.4."
 - B. Revise Keynote 17 – Detail reference to read: "See Detail 26/A-7.3." Refer to Addendum Drawings Item No. 50.
 - C. Revise Keynote 21 – Detail reference to read: "See Details 7, 15, 17/A-7.3."
 - D. Add Keynote Note 23 – "Recess lighting see Detail 34/A-7.5 and refer to Electrical drawings."
 - E. Plan – Revise Keynote reference in Rooms 1-103 and 1-104 to Keynote 23.
 - F. Ceiling Legend – Revise detail reference for 5/8" gypsum board ceiling... to 30 & 31.
12. Sheet A-2.1.3
 - A. Plan – Revise Keynote 19 reference at Door No. 1-132B to Keynote 21.
 - B. Plan – Revise Keynote 21 reference above "MECHANICAL ATTIC" to Keynote 19.
 - C. Plan – Add note "SIM" to Detail reference 35/A-7.8 by Gridline 1-L and 1-13.5.
 - D. Plan – Relocate detail reference 7/A-7.8 closer to Keynote 17. Remove note "SIM".
 - E. Plan – Remove detail reference 35/A-7.4 adjacent to keynote 17.
 - F. Plan – Add detail reference 35/A-7.4 at end of canopy by grid line 1-B and 1-8.
 - G. Plan – Add detail reference 9/A-7.8 "SIM" at Gridline 1-B and 1-F at canopy.
 - H. Revise Keynote 17 reference to read: "See detail 7/A-7.8."
 - I. Revise Keynote 21 to read: "See Attic Access Door".

13. Sheet A-2.1.4

- A. Add Keynotes 15 and 16 and miscellaneous minor plan revisions. See revised Sheet A-2.1.4

14. Sheet A-2.1.5

- A. Detail 1 - Building 1 – Enlarged Floor Plan, Fire Extinguisher location (Keynote 35), relocate adjacent to counter by water heater.
- B. Detail 2 - Building 1 – Enlarged Restroom Plan, Room 1-130, relocate Keynote 47 from standard stall to handicap stall.
- C. Detail 5 - Restroom Accessories – L – Mirror, Change size to 18X36.
- D. Revise Keynote 15 to read "Water Closets (toilets) shall use not more than 1.1 gallons per flush..."

15. Sheet A-2.1.6

- A. Plan – Relocate and center Door 1-116 between north and south wall. See revised Sheet A-2.1.1.
- B. Keynotes – Notes – Add the following below Note 2: "A. Roller shades shall be used in all offices where system furniture is used."

16. Sheet A-2.1.7

- A. Plan – Relocate and center Door 1-116 between north and south wall. See revised Sheet A-2.1.1. Revise furniture arrangement to leave open space between workstations.
- B. Keynotes – Furniture contact – Revise Crate and Barrel furniture contact to: "Janice Pack or Paul Hernandez Crate and Barrel (714) 513-3896 and (714) 825-0060."

17. Sheet A-2.2.1

- A. Add Keynotes 41 and 42 and miscellaneous minor revisions. See attached revised Sheet A-2.2.1.

18. Sheet A-2.2.3

- A. Plan – Revise ceiling height of Electrical Room 2-128 and Fire Riser Room 2-130 to 8'-2 ½".
- B. Revise Keynote 18 detail reference to read: "See detail 34/A-7.5."
- C. Ceiling Legend – Revise detail reference for 5/8" gypsum board ceiling... to 30 & 31.

19. Sheet A-2.2.5

- A. Revise roof drain and slope at Electrical Room. See revised Sheet A-2.2.5.

20. Sheet A-2.2.6

- A. Add Keynote 50 – “Flat screen monitor for photovoltaic system. Refer to Electrical Drawings.”
- B. Detail 1 - Building 2 – Enlarged Reception/Restroom Plan, add Keynote 50 reference to east side of concrete masonry pilaster by entry door.
- C. Detail 1 - Building 2 – Enlarged Reception/Restroom Plan, in rooms 2-118 and 2-119 revise Elevation reference to A-5.2.5.
- D. Detail 2 - Building 2 – Enlarged Kitchen Plan, revise Elevation reference in rooms 2-116 and 2-117 to A-5.2.5.
- E. Detail 2 - Building 2 – Enlarged Kitchen Plan, add door per Sheet A-2.2.1.
- F. Detail 3 - Restroom Accessories – L – Mirror, Change size to 18X36.
- G. Revise Keynote 15 to read “Water Closets (toilets) shall use nor more than 1.1 gallons per flush...”

21. Sheet A-2.2.7

- A. Plan – remove grid pattern in Exercise Room 2-107.
- B. Keynotes – Notes – Add the following below Note 2: “A. Roller shades shall be used in all offices where system furniture is used.”

22. Sheet A-2.3.1

- A. Plan – Remove window sill line in rooms 3-100, 3-118 and 3-123.
- B. Revise Keynotes 30, 31 and 32 detail references to read: “See Detail 23/A-0.4.”

23. Sheet A-2.3.2

- A. Plan – Remove window sill line in rooms 3-215 and 3-219.
- B. Revise Keynote 37 detail reference to read: “See Detail 23/A-0.4.”

24. Sheet A-2.3.3

- A. Revise Keynote 8 to read “Sculptured MDF wall, see interior elevations.”
- B. Add Keynote 15 – “Recess lighting fixture, see detail 33/A-7.5 and refer to Electrical drawings.
- C. Ceiling Legend – Revise detail reference for 5/8” gypsum board ceiling... to 30 & 31.

25. Sheet A-2.3.4

- A. Ceiling Legend – Revise detail reference for 5/8” gypsum board ceiling... to 30 & 31.

26. Sheet A-2.3.8

- A. Detail 2 – Building 3 – Enlarged Shower Room 3-111 – Revise Keynote reference from 19 to 47 and Accessory type from L to Z.
- B. Detail 3 – Building 3 – Enlarged Shower Room 3-114 – Revise Keynote reference from 19 to 47 and Accessory type from L to Z.
- C. Detail 4 – Building 3 – Enlarged Shower Room 3-207 – Revise Keynote reference from 19 to 47 and Accessory type from L to Z.
- D. Detail 5 – Building 3 – Enlarged Shower Room 3-210 – Revise Keynote reference from 19 to 47 and Accessory type from L to Z.
- E. Detail 8 – Restroom Accessories – L – Mirror, Change size to 18X36.
- F. Detail 8 – Restroom Accessories – Add Equipment Type Z – Custom Mirror.
- G. Revise Keynote 15 to read "Water Closets (toilets) shall use nor more than 1.1 gallons per flush..."
- H. Add Keynote 47 – "Custom Mirror. See Interior Elevation and Details 6 and 7/A-7.10. Bottom of mirror to be at 40" A.F.F. See Detail 1/A-0.5."

27. Sheet A-2.3.12

- A. Keynotes – Notes – Add the following below Note 2: "A. Roller shades shall be used in all offices where system furniture is used."

28. Sheet A-2.3.13

- A. Keynotes – Notes – Add the following below Note 2: "A. Roller shades shall be used in all offices where system furniture is used."

29. Sheet A-2.3.14

- A. Keynotes – Furniture contact – Revise Crate and Barrel furniture contact to: "Janice Pack or Paul Hernandez Crate and Barrel (714) 513-3896 and (714) 825-0060."

30. Sheet A-2.3.15

- A. Keynotes – Furniture contact – Revise Crate and Barrel furniture contact to: "Janice Pack or Paul Hernandez Crate and Barrel (714) 513-3896 and (714) 825-0060."
- B. Plan – Room 3-205, furniture layout to match Room 3-105.

31. Sheet A-2.4.1

- A. Add Keynotes 53, 54, 55 and 56 and revised Details 4 and 5. See attached revised Sheet A-2.4.1.

32. Sheet A-3.1

- A. Add Keynotes 11, 12, 13 and 14 and revised Details 1 and 2. See attached revised Sheet A-3.1.

33. Sheet A-3.2

- A. Detail 3 - Building 2 – North Elevation, door lower per finish floor elevation at -9 ½”.

34. Sheet A-3.4

- A. Revise Keynotes 9 and 10, add Keynotes 11, 12, 13 and 14, and add Details 7 and 8. See revised Sheet A-3.4.

35. Sheet A-4.1.1

- A. Detail 2 - Building 1 – Building Section (Staff Building), change ceiling height to 8'-0" in Storage Room.
- B. Detail 3 - Building 1 – Building Section (Classroom Bldg. and Staff Building), change ceiling height to 8'-0" in Workroom 2 and Support Staff 2 Room.

36. Sheet A-4.1.4

- A. Detail 3 - Building 1 – Wall Section, revise detail reference to 8/A-7.8.
- B. Detail 5 - Building 1 – Pilaster Section, change detail name to "Building 1 - Wall Section."
- C. Detail 5 - Building 1 – Wall Section, change ceiling height to 8'-0" in Storage Room.

37. Sheet A-4.2.1

- A. Detail 1 - Building 2 – Building Section, change ceiling height to 8'-2 1/2" A.F.F. in Electrical Room.
- B. Detail 1 - Building 2 – Building Section, remove "TEL." from room name.

38. Sheet A-4.2.4

- A. Detail 4 - Building 2 – Wall Section, change ceiling height to 8'-2 1/2" A.F.F. in Fire Riser Room.

39. Sheet A-4.4

- A. Revise Details 3 and 5. See attached revised Sheet A-4.4.

40. Sheet A-5.1.1

- A. Detail 103 - Men's Toilet – Building 1, Revise graphing for wall hung sink, on elevation 2 and 3.

41. Sheet A-5.1.2

- A. Detail 104 - Women's Toilet – Building 1, Revise graphic of wall hung sink on Elevations 2 and 3 to the type shown on Detail 130, Elevation 1.

42. Sheet A-5.1.5

- A. Detail 118, Classroom – Building 1, Elevation 4 – Revise graphic for projector to depict suspension from ceiling.
- B. Detail 118, Classroom – Building 1, Elevation 2, Keynote 52 reference arrow to extend to 2nd rectangle above whiteboard.

43. Sheet A-5.2.1

- A. Detail 100 - Reception/Hall 1 – Building 2, Elevation 4, add monitor on left hand concrete masonry wall mounted 5'-0" A.F.F. to bottom of monitor.

44. Sheet A-5.3.2

- A. Detail 107 - Women's Staff Toilet – Building 3, add wall hung sink to Elevation 1 to the type shown on Detail 130, Elevation 1 and revise graphic of wall hung sink on Elevation 4 to the type shown on Detail 130, Elevation 1.
- B. Detail 108 - Men's Staff Toilet – Building 3, add wall hung sink to Elevation 4 to the type shown on Detail 130, Elevation 1 and revise graphic of wall hung sink on Elevation 3 to the type shown on Detail 130, Elevation 1.

45. Sheet A-5.3.6

- A. Detail 121 - Jan. – Building 3, change Keynotes 35 and 36 to Keynote 53. Finish to be TC2 per Ceramic Tile Legend on Sheet A-6.3.1.

46. Sheet A-6.1.1

- A. Finish Schedule Building 1 – Room 1-100, revise Floor Finish to TP1.

47. Sheet A-6.2.1

- A. Door Schedule Building 2 – Door 2-128A – Remarks, add "Provide Panic Hardware."
- B. Door Schedule Building 2 – Door 2-128B – Revise width to 2'-4". Add "Provide Panic Hardware" to Remarks column.

48. Sheet A-6.3.1

- A. Finish Schedule Building 3 – Room 3-125, change Base to W1.

49. Sheet A-7.2

- A. Detail 17, revise note for Eyebolt at two locations to read "Forged eye bolt with ½" stud diameter: 304 stainless steel, welded to plate.

50. Sheet A-7.3

- A. Add Detail 26. Detail similar to Detail 27 but without 2x between wall and motorized screen. Motorized screen mounts directly to wall.
- B. Detail 33 – remove note (O.F.C.I.) from detail.

51. Sheet A-7.5

- A. Add new Details 25, 33, 34 and 35. See attached revised Sheet A-7.5.

52. Sheet A-7.8

- A. Detail 9 – Add note to read “Exposed CMU to be sealed, see Exterior Elevations.”
- B. Detail 9 – Revise flashing to “Reglet Springlok Flashing.”
- C. Detail 9, Remove duplicate note “Sealant to clean surface.”
- D. Detail 35 – Metal Flashing Cover, relocate one (1) block course higher.

53. Sheet S-2.3.1

- A. Revise Detail A – Building 3 – Foundation Plan. See attached SKS-1.

54. Sheet S-2.4.1

- A. Revise Detail C – Trash Enclosure – Foundation Plan. See attached SKS-2.

55. Sheet S-4.1

- A. Revise Detail 4 – Cantilever Column Footing Adjacent to CMU Wall. See attached SKS-3.
- B. Add Detail 5 – Footing At Building #3 Architectural Fin Wall. See attached SKS-4.
- C. Revise Detail 6 – Footing Schedule. See attached SKS-5.
- D. Revise Detail 8 – Cantilever Column Footing. See attached SKS-6.
- E. Revise Detail 19 – Freestanding Masonry Wall Schedule. See attached SKS-7.

56. Sheet P-1.0

- A. Revise Fixture Schedule. See attached revised Sheet P-1.0.

57. Sheet P-2.2.3

- A. Relocate Roof Drain and Overflow Drain. See Partial Roof Plan on attached sketch P-2.2.3.

58. Sheet P-2.4.1

- A. Add Detail 5 – Air Compressor Details and revise Details 1 and 3. See attached revised Sheet P-2.4.1.

59. Sheet P-3.0

- A. Revise Detail 3 - Building 2 – Plumbing Enlarged Plan. See revisions to mixing valve, expansion tank and relocated roof and overflow drains on attached sketch P-3.0.

60. Sheet E-0.0

A. Revise Symbol List and Fixture Schedule. See attached revised Sheet E-0.0

61. Sheet E-0.1

A. Revise Single Line Diagram and Key Note 13. See attached revised Sheet E-0.1.

62. Sheet E-0.1.1

A. Add new sheet, Photovoltaic PV Power System Details. See attached Sheet E-0.1.1.

63. Sheet E-0.2

A. Add note to Detail 2. See attached revised Sheet E-0.2.

64. Sheet E-0.3

A. Revise entire Title 24 Sheet. See attached revised Sheet E-0.3.

65. Sheet E-0.4

A. Revise entire Title 24 Sheet. See attached revised Sheet E-0.4.

66. Sheet E-0.5

A. Revise Panel Schedules. See attached revised Sheet E-0.5.

67. Sheet E-0.6

A. Revise Panel Schedules. See attached revised Sheet E-0.6.

68. Sheet E-0.7

A. Revise Lighting Control Panel Schedules. See attached revised Sheet E-0.7.

69. Sheet E-0.9

A. Revise Detail 1 Notes. See attached revised Sheet E-0.9.

70. Sheet E-1.1

A. Add Keynotes 18, 19 and 20 and revise Electrical Site Plan as noted. See attached revised Sheet E-1.1.

71. Sheet E-2.1.1

A. Revise Keynote 18 and minor plan revisions. See attached revised Sheet E-2.1.1.

72. Sheet E-2.1.2

A. Revise Keynotes 3 and 9 and Details 1 and 3. See attached revised Sheet E-2.1.2.

73. Sheet E-2.1.5

A. Add new sheet, Photovoltaic Roof Plan and Details. See attached Sheet E-2.1.5.

74. Sheet E-2.2.1

A. Add Keynote 23 and minor plan revisions. See attached revised Sheet E-2.2.1.

75. Sheet E-2.2.2

A. Revise Keynotes 6, 9, 23 and 30. Add Keynote 33 and various plan revisions. See attached revised Sheet E-2.2.2.

76. Sheet E-2.2.3

A. Add Keynote 24 and minor plan revisions. See attached revised Sheet E-2.2.3.

77. Sheet E-2.3.1

A. Revise Keynotes 8 and 9. Add Keynote 23 and minor plan revisions. See attached revised Sheet E-2.3.1.

78. Sheet E-2.3.3

A. Revise Keynote 12 and minor plan revisions. See attached revised Sheet E-2.3.3.

79. Sheet E-2.3.4

A. Revise plan as noted. See attached revised sheet E-2.3.4.

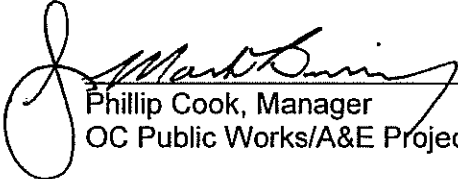
80. Sheet E-2.4.1

A. Revise Keynote 5 and Detail 1 as noted. See attached revised Sheet E-2.4.1.

Bidders shall acknowledge receipt of this addendum by inserting its number in the space provided in the Proposal. Failure to do so may subject bidder to disqualification.

For additional questions, please contact the Project Manager, Stephen Johsz, at (714) 667-4918.

COUNTY REPRESENTATIVE


Phillip Cook, Manager
OC Public Works/A&E Project Management

cc: Clerk of the Board
Stephen Johsz, OC Public Works
File

Attachments

SECTION 11450
RESIDENTIAL EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Kitchen appliances.
- B. Laundry appliances.

1.02 RELATED REQUIREMENTS

- A. Section 15400 - Plumbing Piping: Plumbing connections for appliances.
- B. Section 16120 - Wire and Cable: Electrical connections for appliances.

1.03 REFERENCE STANDARDS

- A. UL (EAUED) - Electrical Appliance and Utilization Equipment Directory; Underwriters Laboratories Inc..

1.04 SUBMITTALS

- A. See Section 01350 - Submittals, for submittal procedures.
- B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.
- C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in County of Orange/OC Public Works's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than 10 years of documented experience.
- B. Electric Appliances: Listed and labeled by UL and complying with NEMA standards.
- C. Gas Appliances: Bearing design certification seal of AGA.

1.06 WARRANTY

- A. See Section 01700 - Contract Closeout, for additional warranty requirements.
- B. Provide Warrantech Companies Preferred Service Plan.
- C. Provide warranty as described with individual appliances.

PART 2 PRODUCTS

2.01 APPROVED APPLIANCE VENDOR

- A. KIVA Kitchen & Bath, 17138 Von Karman Avenue, Irvine, CA 92614; (949) 221-0600 Ext. 217. Contact: Mary Fotopoulos, mfotopoulos@basapp.com.
- B. Substitutions: See Section 01640 – Substitutions, for selection criteria.

2.02 KITCHEN APPLIANCES

- A. Range/Oven (Rooms 2-115 and 3-124): Viking, Model VGCC5366BSS - 36" wide range with 6 burners, single oven. Warranty B2 – 2-year warranty plan (over 1500).
- B. Hood (Room 3-124): Viking, Model VWH3648SS - 36" width shell and VIV600 600 cfm. Warranty A2 – 2-year warranty plan (under 1500).

- C. Range Top (Room 2-115): Viking, Model VGRT5366BSS with island trim - 36" wide range with 6 burners. Warranty B2 – 2-year warranty plan (over 1500).
- D. Rear Downdraft (Room 2-115): Viking, Model VIPR161RSS - 36" wide and VIDV500 500 CFM. Warranty A2 – 2-year warranty plan (under 1500).
- E. Oven (Electric) (Rooms 2-115 and 3-124): Viking, Model VES0130SS - 30" wide. Warranty B2 – 2-year warranty plan (over 1500).
- F. Microwave (Rooms 1-102, 2-115 and 3-124): Viking, Model VMOS200SS, with VMTK301SS trim kit. Warranty A2 – 2-year warranty plan (under 1500).
- G. Refrigerator/Freezer (Rooms 1-102, 2-115 and 3-124): Viking, Model VCSB548DSS - 48" wide. Warranty B2 – 2-year warranty plan (over 1500).
- H. Dishwasher (Rooms 2-115 and 3-124): Asko, Model D5122ADA-S tall tub – 24 inches wide. Warranty B2 – 2-year warranty plan (under 1500).

2.03 LAUNDRY APPLIANCES

- A. Washer (Room 3-126): Maytag, Model MHWE550WW with XHP1550 WW pedistal; Performance Series front load steam washer. Warranty A2 – 2-year warranty plan (under 1500).
- B. Washer (Room 3-218): Maytag, Model MHWE450WW with XHP1550WW pedistal; Performance Series front load washer. Warranty A2 – 2-year warranty plan (under 1500).
- C. Dryer (Room 3-126): Maytag, Model MGDE500WW with XHP1550WW pedestal; Performance Series front load steam gas dryer. Warranty A2 – 2-year warranty plan (under 1500).
- D. Dryer (Room 3-218): Maytag, Model MGDE550WW with XHP1550WW pedestal; Performance Series front load steam gas dryer. Warranty A2 – 2-year warranty plan (under 1500).

2.04 NURSE EXAM ROOM REFRIGERATOR

- A. Undercounter Refrigerator/Freezer (Room 3-104): Kelvinator Scientific, Model BT650, keylock.

2.05 BBQ

- A. Grill (Room 3-128): Viking, Model VGIQ4122RT1N with one standard 25,000 BTU stainless steel burner and one 30,000 BTU TruSear infrared burner and double side burners (Natural Gas) - 41 inches wide. Provide with 12 foot natural gas supply hose and quick disconnect assembly, Model GSH12. Warranty B2 – 2-year warranty plan (over 1500).
- B. Grill Cart: Model BQC410T1 - 41 inch wide.
- C. Cart Cover: Model CV41T-CSB - 41" wide.
- D. Rotisserie: Model BQRB418T 8-inch basket and forks.
- E. Tool Set: Model BQTS.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify utility rough-ins are present and correctly located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Anchor built-in equipment in place.

3.03 ADJUSTING

- A. Adjust operating equipment to efficient operation.

3.04 CLEANING

- A. Remove packing materials from equipment.
- B. Wash and clean equipment.

END OF SECTION

**SECTION 16300
PHOTOVOLTAIC (PV) ELECTRIC POWER SYSTEM**

PART 1 - GENERAL

1.01 SCOPE

- A. Work Included: All labor, materials, appliances tools, equipment, facilities transportation and services necessary for and incidental to performing all operations in connection with furnishing, delivery and installation of the work of this Section, complete as shown on the drawings and/or specified herein. Work includes, but is not necessarily limited to the following:
1. Examine all other sections for work related to those other sections and required to be included as work under this section.
 2. General provisions and requirements for electrical work.
 3. Provide a complete and operable photovoltaic (PV) power system. The PV system shall convert sunlight into electricity with multiple sunlight-to-direct current (DC) photovoltaic electric conversion panels combined into sub-arrays and arrays. DC-to-AC automatic grid-tie (connected) inverters to convert the DC electrical energy to sine wave voltage alternating current (AC) energy. Electrical connection circuits and circuit devices to interconnect the PV system and utility grid system, for both electric power circuits and circuits performing control/monitoring of the PV system equipment and operation.

1.02 SUBMITTALS (ADDITIONAL REQUIREMENTS)

- A. General
1. Submit product data sheets for all switches, inverters, combiners, wiring devices, device plates, controllers, power supplies, photo electric devices, cabinets, outlet box requirements, control wires, photovoltaic panels, collectors, hardware, software, sensors/transponders, etc.
 2. Submit detailed shop drawings including dimensioned plans, elevations, details, single line diagrams and point to point (terminal end-to-end terminal) wiring diagrams and descriptive literature for all component parts, cabinets and proposed identification designations.
 3. Diagrams shall be specific for this project and directly applicable thereto. Generic drawings and diagrams are not acceptable.
 4. Submit projected best power flow calculations, voltages and worst case voltage drops calculations on all circuits.
 5. Floor Plan:
 - a. Show location, orientation, photovoltaic panels and arrays, group designations, and other specific design symbols and designations to define the installation, location, and configuration of the specific devices and sensors being provided under this contract.

- b. Show and identify the individual circuits, control devices, equipment routing and connection points.
 - 6. Block Diagram – Show interconnections between components specified in this Section and devices furnished under the other sections. Indicate data communication paths and power flow, data buses, data gateways, and other devices to be used. Describe characteristics of the system.
 - 7. Daylight – Computer model(s) of placement of photovoltaic panels and arrays, projected system output daily and at one week intervals over a one year calendar time period.
 - 8. Software and Firmware Operational Documentation:
 - a. Software operating and upgrade manuals.
 - b. Program Software Backup: On a magnetic media, optical compact disc (CD or DVD), complete with data files.
 - c. Device address list.
 - d. Printout of software application and graphic screens.
 - e. Descriptions of software program control and monitoring operations.
- B. Short Circuit, Time/current Coordination and ARC-Fault
- 1. Perform and submit engineered settings for each fuse and adjustable circuit breaker device, showing the correct time and current settings to provide the coordination within the limits of the specified equipment, per the latest applicable standards of IEEE and ANSI. Provide Electric ARC-FLASH calculations as part of the coordination study recommendations. The information shall be submitted in both tabular form and on time current log-log graph paper, with an engineered narrative, (6) six copies.
 - 2. The goal is to minimize an unexpected but necessary electrical system outage and personnel exposure to the smallest extent possible within the fault occurrence location, using the specified contract equipment, including but not limited to:
 - a. IEEE-242, Recommended Practices for Protection and Coordination of Industrial and Commercial Distribution.
 - b. IEEE-1584, Guide to Performing ARC-FLASH Hazard Study.
 - c. CEC/NEC latest revisions.
- C. Utility Notification and Submittals
- 1. The Contractor shall notify in writing the local electric Utility Company Representative at the start of the construction contract about the PV grid-tied system within 60 days after award of construction contract. The Contractor shall request, in writing, the Utility Company interconnection forms, applications and paperwork from the Utility Representative.

2. The Contractor shall complete the Utility applications, paperwork and supply the Utility requested equipment shop drawing information and documentation in the name of the Owner, to the Utility Company Representative.
 3. Six (6) copies of all Utility submitted documents shall also be transmitted to the OWNER's Representative, at the time of the submissions to the Utility Representative.
- D. Extended warranty (additional requirements).
1. Manufacturer's extended warranties, beyond one year after acceptance of building occupancy permit or contract notice completion date, for material, labor, workmanship and performance:
 - a. Not more than 20% degradation of initial PV system rating during the first 20 years of operation.
 - b. Installed photovoltaic system 10 years warranty.
 - c. Photovoltaic panels for 25 years, warranty, maintain not less than 80% of STC and PTC rating.
 - d. Inverters, data loggers and PV-combiner boxes, 10 years.
- E. Certifications, rebates and subsidies:
1. The Contractor shall notify each agency representatives providing certificates of compliance, monetary rebates and monetary subsidies for renewable energy and photovoltaic system installation, in writing, at the start of the construction project about the system. The Contractor shall request, in writing, each agency's application forms and paperwork to establish eligibility for the contract PV system within 60 days after award of construction contract.
 2. The Contractor shall complete the applications and paperwork and submit to each agency with supporting documentation requested by each agency. Six (6) copies of submitted information shall also be transmitted to the OWNER's Representative at the same time.
 3. Monetary rebates and subsidies shall accrue to the OWNER, not to the Contractor.

1.03 Definitions for the Photovoltaic System

1. **Azimuth Angle:** A horizontal angle measured east-to-west to which a photovoltaic array or individual PV panels are adjusted to maximize array output, depending on time of day. This optimum azimuth angle to maximize output will vary daily.
2. **Diffuse Insolation:** The radiant light energy from the sky incident upon PV array unit surface area during a specified time period (same units as for direct insolation).
3. **Direct Insolation:** The radiant energy from the sun (and a small area of sky surrounding it, defined by the acceptance angle of the pyrheliometer) incident upon PV array unit surface area during a specified time period. (MJ/m² per hour, day, week, month or year, as the case may be.)

4. **Full Sun:** The full sun condition is the amount of power density received at the equator surface of the earth at noon on a clear day – about 100 mw/cm^2 (1000 W/M^2 or 1kW/M^2). Levels of sunlight are often expressed as 0.5 sun or 0.1 sun. A figure of 0.5 sun means that the power density of the sunlight is one-half of that of a full sun. Note: Partial cloud edge effect enhanced reflections may cause this full sun insolation power density value to increase up to 150% for periods up to 20 minutes. The inverter kW overload rating must be increased to include this additional capacity.
5. **Incident Light:** The incident sunlight is the amount of sunlight reaching an object/array.
6. **Insolation:** The amount of light energy reaching an area/array. Usually expressed in milliwatts per square centimeter, or watts per square meter, or kilowatt per square meter, or langleys.
7. **NABCEP:** North American Board of Certified Energy Practitioners.
8. **Parallel Connection:** A wiring configuration used to increase DC current (amperage). Parallel wiring is positive-to-positive (+ to +) and negative (- to -). Parallel connection is opposite of a series connection.
9. **Peak Power Point:** Operating of the I-V (ampere/current-voltage) curve for a photovoltaic cell or photovoltaic panel where the product of the current value times the voltage value is a maximum.
10. **Peak Watts:** A measurement of electricity produced by a solar generator (photovoltaic panel/array) at noon on a sunny day, under predetermined standard test conditions (see PTC and STC).
11. **PTC:** Performance Test Conditions, Photovoltaic for Utility Scale Applications, (PV USA), State of California Energy Commission tested, calculated and published values for DC output rating PV panels and inverters. (Typically PTC rating averages are approximately 8% to 12% less than STC rating method) based on:
 - a. Solar Cell Temperature in ambient and at 1-meter/second wind velocity = 20 degrees Centigrade ambient
 - b. Solar Radiance(intensity) = 1000W/m^2
 - c. 1.5 air mass.
12. **Series Connection:** A wiring configuration used to increase DC voltage. Series wiring is positive to negative (+ to -) or negative to positive (- to +). Series connection is opposite of parallel connection.
13. **Solar Array (Photoelectric/Photovoltaic):** Any number of photoelectric/photovoltaic solar cells/panels connected together electrically to provide a single electrical output. The array is an electrically integrated assembly of photoelectric solar cells and/or panels together with support structure (including foundation and other components, as required) to form an installed system unit that produces DC power from sunlight.

14. **Solar Cell:** The basic photovoltaic device which generates electricity when exposed to sunlight. Multiple solar cells are connected together inside a photovoltaic panel.
15. **Photovoltaic-PV (Solar) Panel:** A manufactured assembly/collection of individual solar cells interconnected in series, in parallel, or in series-parallel combination to provide greater voltage, current, or power than can be furnished by a single/ individual solar cell. Multiple photovoltaic (solar) panels may also be connected in series or parallel to furnish any desired voltage, greater current, or greater power. Photovoltaic (Solar) panels are made up as a complete factory manufactured assembly. Multiple large quantity, inter-connected collections of photovoltaic(solar) panels with support hardware, are usually called solar/PV arrays. The terminology "PV-module" may also be used interchangeably with the terminology "PV panel".
16. **STC: Standard Test Conditions**
 PV panel manufacturer's DC output rating using STC (typically STC rating averages are approximately 12% more than PTC rating method) based on:
 - a. ASTM Standard Solar Spectrum atmosphere = 1.5 thickness of atmosphere
 - b. Solar cell temperature = 25 degree Centigrade
 - c. Solar Radiance (intensity) = 1000 W/m²
17. **Sub-Array String:** A smaller portion (subset) of PV panels that are the part of a larger complete Solar/PV array. Sub-array strings of PV panels are connected together (series/parallel) to attain desired circuit operating DC voltage and amperages, connecting the sub-array string to the PV combiner boxes.
18. **Tilt Angle:** A vertical angle measured from the horizontal to which a photovoltaic (solar) array and individual photovoltaic (solar) panels are tilted towards the sky. The tilt angle is chosen to maximize the array output. Depending upon latitude, season of the year and time of day, the optimum tilt angle to maximize output will vary daily.

1.04 MANUALS AND DOCUMENTATION (ADDITIONAL REQUIREMENTS)

- A. Hardware, Software and Firmware Operational Documentation
 1. Hardware and software operating manuals.
 2. Program Software Backup: On a magnetic media or optical compact disc (CD) or digital video disc (DVD) complete with data files.
 3. Device address list.
 4. Printout of software application and graphic screens.
 5. Operation of adjustable controls.

6. Testing and adjusting features.
- B. Instructions (additional requirements)
1. Provide instruction in the operation and maintenance of the PV system to the OWNER's personnel.

1.05 QUALITY ASSURANCE (ADDITIONAL REQUIREMENTS)

A. General

1. The Contractor shall engage NABCEP trained personnel and subcontractors to perform installation final start-up, commissioning, configuration and PV system testing.
2. Qualified NABCEP and manufacturer-authorized technicians shall provide a complete inspection prior to energizing of the system, to assure that all passive and active system components have been provided and installed in accordance with the contract documents and manufacturer's recommendations. Inspections shall include: Control stations, equipment, sensors, wiring, grounding, connectors, connections, labeling, enclosures, polarity, and general workmanship. Printed inspection sheets of component and other system elements shall be created, filled in, dated, initialed and included in the system O&M manual.

B. Standards and Approvals

1. Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction and marked for intended use.
2. Comply with 47 CFR, Subparts A and B, for Class A digital devices.
3. Comply with NFPA 70 and CEC-T24.
4. Comply with State and Local energy and electrical codes.
5. Control wiring shall be in accordance with NEC/CEC electrical codes.
6. Ethernet LAN protocols shall conform to and be fully compatible with all IEEE and EIA/TIA-568B, for 10/100 Base T, TCP/IP fast Ethernet.
7. BACnet shall conform with the latest prevailing ASHRAE standard.
8. Equipment and components shall be:
 - a. UL listed and labeled.
 - b. Certified for compliance with Federal-EPA and State of California Title-24 Energy Commission.
9. Underwriters Laboratory UL-1741.
10. California and National Electrical Code CEC/NEC-690.
11. IEEE 519 and 929.

12. International Electrotechnical Commission IEC-61215 and 61646.

1.06 PHOTOVOLTAIC SYSTEM GENERAL

A. Electric Output Voltages

The photovoltaic system electrical output voltage shall be utility grid connected; see drawings for specific voltage applications:

1. 480/277 volt – 3 phase, 4 wire grounded “WYE”, 60Hz, AC, sine wave.

B. Electric Load

1. The photovoltaic system electrical load output requirement shall be based on and measured at the load out AC terminals of the inverter. The inverter operation losses (efficiency) shall be compensated in the inverter rating to ensure full specified kW AC output.

C. Negative grounded or positive grounded – DC.

1. The grounding of the photovoltaic system direct current – DC equipment, shall comply with the PV-module/panel manufacturer's recommendations. The equipment shall be specifically designed and rated to accommodate the DC-grounding method.
2. Inverters and PV-combiner boxes DC grounding method shall be “negative-ground” or “positive-ground”. The selection of equipment ground and DC ground method shall comply with the PV-module/panel manufacturer's recommendations for maximum system performance.

PART 2 - PRODUCTS

2.01 GRID-TIED INVERTERS

A. General

1. The inverters shall convert direct current (DC) input from multiple solar photovoltaic (PV) cell and panel arrays to output load of 60Hz, AC with true, pure sine wave electric output and single connect to electric utility grid load, by inverting input DC to output AC. The inverter shall operate in parallel, automatically synchronize, interconnect and track interactively with the electric utility grid 60Hz AC load. Loss of grid source electric power shall cause the inverter to immediately de-energize (shut-down) the inverter output, until the grid source is restored.
2. The inverter shall be static, self-contained, suitable for heavy-duty, high ambient (direct sun exposure) temperature, industrial/commercial inductive load applications. Fully automatic operation including start-up, shut-down, self-diagnosis and fault protection.
3. NEMA-3R metal enclosure, with rust inhibitor primer and finish paint, manufacturer's standard color suitable for floorstanding and/or surface wall mount. Final mounting method shall ensure controls/switches/ monitors are positioned at approximately eye level. DC/AC energized exposure warning labels on cover and source/load (input-output) identification for each circuit.

4. Inverters shall be tested, labeled and listed with the State of California Energy Commission eligible inverters program. Certified inverter testing for California Energy Commission, UL, ETL and respective labels.
5. Ambient operating temperature range, with full specified capacities and no operating derating minus 20 degrees centigrade through plus 50 degrees centigrade.
6. The inverter shall be compatible with the photovoltaic panels. The manufacturers shall verify and certify the inverter will operate correctly and safely with the PV panels. Submit certification letter with shop drawings. ISO-9001 certified manufacturer.
7. Extended warranty on inverter system.
8. As manufactured by: Solectria Renewables; or Xantrex; or Power One; or by the manufacturer of the PV panels.

B. Inverter Characteristics

- | | | |
|-----|---|---------------------------------------|
| 1. | Internal lightning and surge protection | UL-1741/IEEE-1547
ANSI 62.41/62.42 |
| 2. | Operating voltage adjustment range | 50% to 120% of nominal |
| 3. | Over/under voltage trip point and time (set default per IEEE-1547) | adjustable
0.16 to 30 seconds |
| 4. | Input/output voltage measurement accuracy and stability no load to full load | $\pm 2\%$ nominal |
| 5. | Output operating frequency | Adjustable
57 to 60.5 Hz |
| 6. | Output operating frequency stability | $\pm 0.2\text{Hz}$ of 60Hz |
| 7. | Output frequency measurement accuracy | $\pm 0.1\text{Hz}$ |
| 8. | Over/under frequency trip | Adjustable
0.16 to 30 seconds |
| 9. | Minimum short circuit withstand and interrupt(bolted fault), but not less then shown on the drawings. | 25,000 ampere AC
7,000 ampere DC |
| 10. | Total harmonic distortion (THD) at any combination of | Less than 5% |

	resistance/inductive load, zero to full load	
11.	Power factor	Greater than 95%
12.	Anti-islanding protection (Loss of utility grid tracking)	UL-1741, IEEE-1547
13.	DC input source 600 volt rated DC – heavy-duty fused disconnect; AC output load 600 volt rated AC - heavy-duty fused disconnect, NEMA-3R	Make and break rated not less than 135% of full inverter capacity including spare Capacity
14.	Overcurrent protection	Automatic inverter limited
15.	Short circuit protection both DC input AC output	UL-1471, IEEE-1547
16.	Surge withstand test	UL-1741, IEEE-1547
17.	Inverter efficiency including transformers (between 30% to 75% load rating)	Not less than 95%
18.	Dark (night) loss (dead bus)	0%

C. Inverter Operational Characteristics

1. The inverter DC input voltage rating shall match photovoltaic panel array normal operating output voltage. Under any condition the DC input voltage shall never exceed 600 volts (open circuit or load circuit or short circuit) between any DC source or any two DC circuit conductors, at temperatures ranging from minus 40 degrees centigrade through positive 100 degrees centigrade.
2. The DC circuit protection system shall ensure that individual PV panels, PV panel sub-array strings and PV panels array are never allowed to operate in open-circuit mode for a period of time exceeding the PV panel manufacturers recommendations, but in no case exceeding 24 hours.
3. Provide adjustable backfeed current and power protection to prevent the utility-grid from flowing into the PV array. Protection threshold shall be zero volts and zero current.
4. The inverter full load continuous kW rating shall not be less than the PV array maximum rated output STC(PV-dc) in full sunlight, plus an additional 50 percent full load spare continuous input and output capacity. But in no case less than indicated on the drawings.
5. Each inverter 60Hz, AC output shall be operable in parallel synchronized connect mode, with similar inverters on a common collector load bus.

6. Provide automatic ground fault protection (detect and trip) on inverter both DC input and AC output.
7. Inverter DC – sub-array combiner enclosure on the inverter input, for each DC circuit, to connect DC circuits from the individual sub-array PV-Combiner boxes, to the inverter input source DC fused disconnect. Provide conduit/wiring terminal and terminal compartments for each AC circuits, each DC circuits and each control/monitoring circuits.
8. Dynamic Maximum Power Point Tracker (MPPT), automatic inverter MPPT algorithm functions, to maximize photovoltaic system kW output and efficiency.
9. Individual disconnect, overload and short circuit protection on each DC input circuit from the PV panels and PV sub-array strings.
10. The inverter shall provide galvanic separation/ isolation between the AC and DC sides of the photovoltaic system.
11. All of the photovoltaic inverters shall provide self-protection and automatic shutdown, to protect against unbalanced interconnection on the inverter output. Typical for single phase inverter connected to three phase power systems and typical for three phase inverters connected to three phase systems.
12. AC Single phase failure detection with automatic inverter shutdown and inverter AC disconnect.

D. Inverter Self-Diagnostics And Monitoring

1. Inverter self-diagnostics, status and monitoring internal software operating system, with front panel LCD visual scrolling display, and menu control manual operator touch-button pad.
2. Remote communication inverter monitoring provide with serial EIA RS485 port. Additionally, provide RS485 to Ethernet protocol LAN communications converter/Gateway, DIN rail mount.
3. Software
 - a. Provide compatible monitoring software for storage and integrated display of the information monitored and measured for the PV system. Display the information on the Public Kiosk and on the Internet.
 - b. Software shall be the product of the inverter/data logger manufacturer.

2.02 PV-COMBINER BOXES

A. General

1. Each PV-combiner box shall combine the output of two or more multiple PV-array/panels/sub-array strings DC output source, as the PV-combiner box input, into a single combined single DC circuit load output, for connection of each PV-combiner box to the inverter DC source input. Individual overcurrent protection for each circuit connected to the PV-combiner box. ISO-9001 certified manufacturer.

2. NEMA-3R tamper-resistant metal enclosure, with rust inhibitor primer and finish paint manufacturer's standard color. Integral enclosure mounting/ attachment brackets. Suitable for outdoor install on vertical or slope surfaces. Energized DC warning label on cover and source/load identification for each circuit.
3. UL-1741.
4. Extended warranty on PV-combiner boxes.
5. As manufactured by the supplier of the PV panels and/or inverters; or Square-D.

B. Electrical

1. Separate input terminal connectors positive, negative and ground for each DC input and DC output circuit connection. Not less than six (6) DC PV panel sub-array string input sources, not less than one (1) "combined-output", to inverter DC load input; plus two (2) spare unused PV panel input sources. Conductor size and capacity terminals to match connecting input/output circuits.
2. DC connections shall be series connections and/or parallel connections to obtain DC voltage operating levels and comply with DC amperage operating requirements. Under any condition the DC input and output voltages shall never exceed 600 volts (open circuit or load circuit or short circuit) between any DC sources or any two DC circuit conductors. At temperatures ranging from minus 40 degrees centigrade through positive 100 degrees centigrade.
3. Internal DC (positive and negative) copper buses, insulated for 600 volt DC bus, ampere capacity equal to the connected circuits plus 50-percent spare unused ampere capacity, but in no case less than 100 ampere DC collector bus rating. Provide ground circuit bus, copper bus. Main circuit breaker DC output load to inverter, internal in the box main circuit breaker same rating as DC bus and with trip indicator for remote monitoring.
4. Each PV panel sub-array string input source circuit connection shall be provided with CEC/NEC code compliant 600 volt DC insulated (touch protected, finger safe) load break fuse holders and fuses, with blown fuse indication (local and remote monitoring) and with OSHA lockout/tagout. Fuse rating not to exceed PV panel manufacturer's recommendation, but in no case not to exceed 15 ampere DC.
5. Internal Lightning Surge Protection, in each box with shunt connection to ground bus.

2.03 PHOTOVOLTAIC (PV) PANELS (THIN FILM)

A. General

1. The photovoltaic panels shall be self-contained factory assembly with internal photoelectric/ photovoltaic solar cells, to convert sunlight into electric DC voltage and current output, static, non-tracking. ISO-9001 certified manufacturer.
2. Photovoltaic panels shall be tested, labeled and listed with State of California Energy Commission California Solar Initiative (CSI), PTC program.
3. Extended warranty on PV panels shall comply with CSI requirements.

4. The photovoltaic panels shall be compatible with the inverter, the manufacturers shall verify and certify the PV panels will operate correctly and safely with the inverter. Submit certification letter with shop drawing.
5. Testing and performance ratings shall be based on tested total of the entire fabricated PV panel/module assembly, not on the individual solar cells contained in each of the fabricated panels.

B. PV Panel Characteristics

1. Tamper-resistant, flame-retardant and water-tight (weatherproof), electric terminal box with removable access cover, for connecting circuits the panel positive/ negative polarity DC output circuits and panel ground, to the sub-array 15 ampere DC branch distribution "string" circuit.
2. Amorphous silicon thin-film solar cells, electrically interconnected in a PV panel/module. Encapsulate the PV panel/module in Ethylene Tetrafluoroethylene (ETFE) polymer. Combined assembly to form a flat, non-rigid flexible photovoltaic laminate.
3. Highpass UV-resistant solar light-transmittances on the front sun-face side, to the encapsulated solar cells.
4. Top terminated potted circuit terminals in a watertight junction box at one end of each PV panel/module. Electric output cables with quick connect terminals, extending from the junction box.
5. Backside of PV panel/module for attachment/anchoring. Ethylene Propylene copolymer adhesive sealant with microbial inhibitor. Apply the adhesive at the PV panel/module factory. Field removable protective "peel and apply" adhesive temporary cover, for final application for cold-bond to the metal roof pans.
6. The roof slope at locations of PV panels/modules install shall be between 3.5 degrees and 60 degrees tilt angle. Barrel/Curved roofs shall exceed 50 ft. radius. Penetrations of the roof substrate shall not be permitted. Roof temperature at PV panel/module locations shall never exceed 185 degrees F.
7. The physical dimensions, configuration, photovoltaic performance of all panels connected to a common PV inverter shall be the same. The manufacturer's product, model and electric characteristics shall be the same for all PV panels connected to a common PV inverter.
8. Bypass diodes shall provide partial shading protection, to prevent overheating and power output reduction, in the event a portion of the panel becomes shaded while the remaining portion of the panel is still exposed to the sun. Diodes shall be contained in the PV panel/module.
9. Earthquake seismic zone-4 withstand and 100 mile per hour wind load withstand (both down-load and up-lift) ratings, with 1.3 wind gust factor. Withstand rating in combination with attachment to roof.
10. UL-94V-0 flame-resistance and UL Class-C fire rating, for all mounting angles and all mounting orientation.

11. UL-1703/IEC 61646 and ICE-61730.
12. 25 year outdoor exposed location continuous operation for all mounting angles from 3.5 degrees through 60 degrees tilt and orientations. Top/front impact withstand of one-inch hailstones at 52 mph; JPL Block-V test; not less than 50 pounds per square foot live weight loading withstand.
13. As manufactured by: United Solar Ovonic – UniSolar series.

C. PV Panel Electrical Direct Current Characteristics

1. Nominal laminate assembly thickness not to exceed 0.25 inches.
2. Weight shall not exceed 1.0 pounds/sq. feet of PV panel area.
3. Nominal Size
 - a. Nominal size 18 ft long x 15.5 inches wide, 144 watts STC, 111 watts PTC, DC output rating.

D. Standing Seam Metal Roof (Additional Requirements)

1. Roof pans shall be part of a UL listed roofing new install system.
2. Roof Pan width of the pan flat area between two parallel standing seams faces shall not be less than 16.75 inches.
3. Metal roof pans shall be zinc coated steel, "Galvalume"® or "Zincalume"®, AZ-55 or AZ-50 treatment, finish complying with Painted, Kynar-500®, Hylar-5000®, Valspar Flurorpon®, PVDF topcoat.
4. Roof pan flat area where PV-panels/modules are applied shall be completely clean and smooth. Roof pan seams, joints, pencil beads stippling, striations, ripples stiffing ribs, defects, dirt, debris, etc. shall not be permitted to occupy/impinge into the PV panels/modules install areas.
5. Coordinate PV panel/module requirements with standing seam metal roof requirements Contract Documents.
6. Chemical, thermal, mechanical and install compatibility of the solar photovoltaic PV panels/modules shall be compatible with the "roofing-system" the PV panel/module will be attached to. The "roofing-system" shall be compatible with the solar photovoltaic PV panels/modules that will be attached to the roofing system.
 - a. The PV panel/module manufacturer shall certify in writing the proposed standing seam metal roof system is approved and compatible with the PV panel/module and attachment methods.
 - b. The same certification and installation/training requirements shall also apply to the installer of the roof system and the installer of the solar photovoltaic PV panels/modules onto the roof.
 - c. Submit six (6) copies of written letters from each of the respective manufacturers and each respective installer. Shall state the proposed products and installers are currently certified, approved and authorized

by the other respective manufacturers, for mutual product compatibility and warranty.

E. PV Wireway Electrical Raceway

1. Provide continuous enclosed metal wireway, for routing and containment of photovoltaic system electrical circuits, Nema-4 X, water-tight, corrosion-resistant. Lay-in type, UL listed for use as wireway and auxiliary gutter for AC and DC electrical circuits up to 600 volts.
2. Provide fittings, connectors, elbows conduit connectors and anchors, continuously grounded end-to-end. Provide "grommets" openings for entrance/exit connections of photovoltaic circuits, and to maintain water-tight rating at each entrance/exit location.
3. Wireway nominal cross section size 6" x 6", as required to insure the wireway percentage wire-fill never exceeds 20% cross sectional area at any locations. Wireway cross section size shall be constant dimensions from end-to-end. Do not mix wireway cross section sizes in a common wireway length.
4. Provides continuous ground/bond conductor in wireway, not less than #10 AWG in wireways.
5. Finish color to match adjacent Architectural finish color.
6. Wireway Attachment to Buildings
 - a. Surface wall mount. Provide metal galvanized "C" channels behind the wireway and attach to building structure and attach to wireway.
 - b. Mounting on standing seam metal roof. Provide non-corrosive S-5! Incorporated, non-penetrating direct attach anchor fittings to the metal roof standing seams. Attach the wireway at each standing seam and wireway crossing location. Attach at not-to-exceed 24 inches on center attachment points to standing seam when wireway is parallel to the standing seams. Attach fittings to wireway with bolt and lock washer connections to each anchor fitting. Anchor fitting configuration type as recommended by S-5! Incorporated for the applicable configurations of roof and wireway.
7. Debris Retention and Guard Channel for Roof Mount Wireway
 - a. Provide a retention guard channel system, adjacent to the wireway and parallel to the wireway. The retention channel shall be positioned on the upslope side of the wireway to intercept and retain roof debris, snow and ice accumulation from impacting the wireway. The wireway shall not be permitted to function as a debris and/or roof guard retention system. The wireway shall not be exposed to the retention of debris that accumulates on the roof.
 - b. Mounting on standing seam metal roof, provide non-corrosive (non-galvanized) S-5! Incorporated, non-penetrating direct attach anchor fittings to the metal roof standing seams. Attach the debris guard at each standing seam debris guard crossing location. Anchor fitting configuration type as recommended by S-5! Incorporated.

8. The S-5! attachment anchor fittings shall be compatible with the "roofing-system" standing seams. The "roofing-system" shall be compatible with the S-5! attachment fittings.

2.04 PHOTOVOLTAIC SYSTEM MONITORING/METERING

A. General

1. Local data logging and remote graphic monitoring access of the photovoltaic system performance, status and alarms/faults with software and network communications.
2. Graphic display of PV system and environmental data, in the building at locations described in the contract documents.
3. Provide transducers/sensors for each monitor point, type and configuration recommended by manufacturer.
4. NEMA-3R tamper-resistant enclosure, minus 20 degrees centigrade to plus 50 degrees centigrade ambient operating temperatures.
5. Internal power supply and TVSS protection.
6. As manufactured by the inverter manufacturer.
7. All metering function accuracies shall be within ± 2 -percent or better, including all sensors, transponders, P.T., C.T., instrumentation and communication connections, certified to comply with ANSI C-12 and Suitable for Utility grade revenue metering. Retain not less than the previous 30 days of measured data storage in non-volatile memory, for recall and review.

B. Monitoring data and sensor/transducer. Provide direct monitor sensors/transducers for each point item and connect to the local data logger with conduit and wire circuits. Direct monitor unless noted otherwise.

1. DC-input voltage and ampere to the inverter, instantaneous and cumulative.
2. AC-voltage, frequency and ampere output from the inverter (line-to-line and line-to-neutral) three phase, instantaneous.
3. Instantaneous DC-kW input and AC-kW output at the inverter (calculated or direct monitor).
4. Irradiance solar energy incident on the PV solar array (single point monitor for each array).
5. Ambient environment:
 - a. Outdoor temperature at the surface of the PV solar array (single mount monitor location for each array).
 - b. Outdoor general ambient air temperature, wind speed, humidity, barometric pressure and wind direction.
6. DC-kWh input and AC-kWh output at the inverter, summation by day-week-month-year and grand cumulative (calculated or direct monitor).

7. PV system operating hours when PV system is generating electric power, summation by day-week-month-year and grand cumulative total.
8. Calculate greenhouse gas offset for the PV system operation. Calculation based on U.S. Department of Energy, Greenhouse Gas Emissions Coefficients for Electrical Power Generation, by electric utility companies Statewide for install location:
 - a. Carbon and CO₂ gas
 - b. Nitrous oxide gas
 - c. Methane gas
9. Monitor each DC PV combiner box to detect and report DC circuit faults. The detection method may be group (common) fault in each box or by individual circuit fault condition location.
 - a. "Tripped" DC circuit breaker
 - b. "Blown" DC circuit fuse
10. Each sensor/transducer unit shall be suitable for outdoor and indoor locations, as applicable for the install location. Each unit with protective shielding, power supplies and conductor terminals.

C. Local Data Logger:

1. Collect data from inverters and sensors/transducers. Analyze data and convert data to digital format for display and communications over the Ethernet LAN and Internet. Multiple parallel input/output channels, self-contained photovoltaic system data logger with power supply.
2. Ports:
 - a. Analog and digital input ports for each sensors/transducers monitor point.
 - b. RS485 communication port.
 - c. Fast Ethernet port for local area network (LAN) monitoring and Internet remote monitoring.
 - d. Visual graphic video display output port for local visual public graphic video display in the building.
3. Software
 - a. Provide compatible monitoring software for storage and integrated display of the information monitored and measured for the PV system. Display the information on the Public Kiosk and on the Internet.
 - b. Software shall be the product of the inverter/data logger manufacturer.

D. Graphic Visual Display Screens

1. Provide graphic video display to visually show the PV system information, including photovoltaic system status, alarms, weather and electrical information. Self-contained flat screen panel type display, surface wall mount as follows:
 - a. At the data logger/inverter location. Nominal 10" graphic video display screen size, monochrome LCD type, weatherproof and vandal-resistant.
 - b. Public Kiosk location; indoor public graphic video display local photovoltaic system "Public access information Kiosk", nominal 24" display screen size, 16:9 screen ratio, color, LCD or Plasma screen type.
 - c. Surface wall mount support bracket to attach to wall and graphic video display screen.
2. Provide graphic video display color and information video display operator control station at each graphic video display location.
3. The graphic video display of PV system information shall update automatically at adjustable intervals. The initial update interval shall be a 15 minutes averaging window.
4. The graphic display system shall communicate with each inverter and with each data logger. Provide both "on-demand" and/or sequential "automatic" graphic and numerical display of each system's operational and status information data points being monitored by the photovoltaic monitoring/metering system.
5. Provide local operator controls for setup and display/selection of the information at all of the graphic display locations.

2.05 Equipment Mounting Hardware

A. General

1. All mounting components, hardware and attachments shall be compatible with and rated for the attached PV system equipment deadweight, size/area and building mounting provisions.
 - a. 100 Mile Per Hour (MPH) continuous winds loading plus 1.3 wind gust loading factor, effective area wind loading, wind downforce withstand and wind uplift withstand ratings.
 - b. Earthquake seismic Zone-4 withstand rating.
 - c. Heavy-duty snow and ice withstand loading ratings.
2. All steel shall be corrosion protection, hot dip galvanized zinc coating, after completion of fabrication and welding. Rated for outdoor structural steel applications.
3. All aluminum shall be hard anodized, rated for outdoor structural aluminum applications.
4. Bolts, pivots, nuts, washers, screws shall be 304 type rust/corrosion resistant stainless steel.

5. Burrs shall be removed, edges shall be sanded and rounded.
 6. Assemblies shall be made electrically continuous for ground/bonding continuity. Provide a ground/bond conductor terminal connector for each complete assembly.
 7. Equipment mounting hardware shall be galvanic and chemically compatible with materials in contact with the hardware, to ensure that no rust/galvanic dissimilar material contact corrosion will occur.
 8. Provide engineered, fabricated equipment hardware mounting drawings, details and calculations coordinated with the equipment mounting provisions, prepared, signed and "stamped" with PE registration by Civil or Structural engineered licensed as a Professional Engineer in the State of California, submit with shop drawings.
 9. Extended warranty on equipment mounting hardware.
 10. As manufactured by: Unirac Inc.; or Power-Fab Inc.; for standing-seam metal roof attachments as manufactured by S-5! Incorporated, non-penetrating direct attach to standing seam ribs.
- B. Mounting Hardware for Photovoltaic (PV) Panels
1. Securely attach the PV panels to the equipment mounting hardware.
 2. Securely attach the equipment mounting hardware to the building structure.
 3. The PV panel mounting hardware type and PV panel orientation shall be as follows and as shown on the drawings.
 - a. Standing-seam metal roof attachment, follow the roof slope with PV panel mounting support direct attach "cold-bond" adhesive to the metal roof flat-pan areas parallel and between seam "ribs" only. No roof penetration by attachment mounting hardware permitted.

PART 3 – EXECUTION

3.01 GENERAL

- A. Conduit and Wire (Additional Requirements)
1. Provide conduit and wire for AC and DC electrical power circuits.
 2. Provide conduit and wire for low voltage control and monitoring circuits.
 3. Conduits with circuits, exposed on the roof, circuit conductors shall be rated for operation in minus 40 degrees to plus 90 degrees centigrade ambient temperatures.
 4. All circuits install in conduits.

B. Circuit Protection Devices (Additional Requirements)

1. Circuit breakers, fuses and disconnect/safety switches shall be rated and labeled to be energized from sources on both the line and load sides.
2. Provide warning labels on each circuit electrical device and equipment: *"Warning Electric shock hazard. Do not touch terminals. Terminals on both the line and load sides may be energized in the closed and open position. Photovoltaic solar electric source circuits"*.
3. Provide nameplate on each main electric utility service disconnect: *"Photovoltaic main disconnect located (insert location description). Warning multiple electric service sources and disconnect locations."*

C. Identification (Additional Requirements)

1. Provide a permanent Label on the inverter, on each disconnect and on each PV combiner box, the label shall include the following information:
 - a. PV system normal operating voltages (AC-DC as applicable) at the specific location, open circuit, short circuit and load output ranges for both voltages and currents (amperes).
 - b. Describe the calculated and installed test measured values for each parameter at each location. Place the labels inside each unit box/housing.

D. Weatherproof Penetrations (Additional Requirements)

1. Each penetration of a weatherproof membrane, or weatherproof assembly shall be "flashed" weathertight.

3.02 TESTING AND COMMISSIONING (additional REQUIREMENTS)

A. General

1. Record and tabulate the results from all observations, tests and measurement and submit for review by OWNER's Representative. Correct, repair or replace equipment with new equipment, that does not conform to the contract documents requirements and/or manufacturer's published data.
2. Install, set up, program and document all software.
3. Request and coordinate the utility company and AHJ for acceptance and certification of the PV system, and permission to operate.
4. Visually inspect and physically test all the installed system operation characteristics, all AC-DC and control circuit polarities, ground/bonding, labeling/identification, anchoring/bracing/ attachments. Document in writing, each action and result for submittal review and future reference use in measuring, maintenance, repair and warranty claims.

B. Testing

1. Set/adjust circuit protection devices, to comply with Short Circuit and ARC-fault recommendations; test each device for proper operation of devices and settings.
2. Test individually each PV panel, each sub-array string and each complete array, test each inverter; test each PV-combiner box; all to verify correct operational compliance individually and as a connected system, with the contract documents:
 - a. Open circuit voltages – AC/DC
 - b. Operational voltages – AC/DC
 - c. kW and ampere input and output – AC/DC
 - d. Inverter input voltage/ampere versus output voltage/ampere – AC/DC
 - e. Inverter automatic functions
 - f. Inverter status and fault conditions
 - g. Anti-islanding grid connect test
 - h. Test and calibrate each sensor/transducer
 - i. Inverter utility interactive grid tracking operation
3. Measure with irradiance instrumentation the incident sunlight intensity at each PV panel, each sub-array string and each array string to determine the expected DC voltages created by the available incident light by each panel under the site conditions. The irradiance measurements shall coincide with the above AC/DC testing. Compare the results to the manufacturer's published performance data for the ambient temperature and install orientation. Compare the results to the actual measured values for the installed PV system voltages, amperages and power output.
4. Perform tests and observations required by NEC/CEC Article 690.
5. Perform the State of California Energy Commission Solar Initiative testing/observations and commissioning guidelines.
6. For a sensible recording of PV system testing, sunlight conditions shall not be less than $400\text{W}/\text{M}^2$ onto the plane of the PV panels during testing.

3.03 INVERTERS

A. Installation

1. Install and connect inverters as recommended by the manufacturer.
2. Connect the inverters to the incoming PV-array/ combiner DC circuits, the outgoing grid-tie AC circuits, photovoltaic monitoring system and utility metering.
3. Set up and program the inverters to operate correctly and safely within the requirements of the contract documents, AHJ, manufacturer's recommendations and applicable building codes.
4. Provide cast-in-place, 6-inch high raised concrete equipment pad, for each floorstanding inverter. Provide "C-channel" horizontal metal channels for each wall mount inverter. Securely anchor to comply with seismic zone-4 seismic earthquake withstand requirements.

B. Special Considerations

1. PV system grounding electrode conductor. Provide two 2" C – 1# 1/0 AWG copper (600 volt) ground/bond electrode conductors from inverter and homerun connect to building main service entrance ground electrode. Connect one ground/bond into the inverter DC ground bus and the second into the inverter AC ground bus.
2. Provide additional "DELTA-INC" heavy duty supplementary lightning surge protection on both the DC-input and AC-output of each inverter, to provide additional surge protection exceeding the inverters UL-1741 and IEEE-1547 requirements. Provide disconnecting means for each surge protector. Connect each surge protector ground path to inverter grounding electrode conductor.

3.04 PV-COMBINER BOXES

A. Installation

1. Install and connect combiner boxes as recommended by the manufacturer.
2. The photovoltaic panel DC branch output circuits connecting from individual PV panels into sub-array strings and connecting the sub-arrays to PV-combiner boxes, shall be configured to never exceed 12 ampere DC under any normal (non-short circuit) operating condition, for each PV sub-array string.
3. The DC circuits connecting each PV-combiner boxes to the inverter DC input, shall be configured to never exceed 70-percent or 70 ampere DC of the box full load capacity (whichever is the lesser amount), under all operating conditions for each PV-combiner box.
4. Provide the quantity of PV-combiner boxes required to ensure compliance with these requirements, but not less than shown on the drawings.
5. Unless shown otherwise on the contract drawings, install the combiner boxes at the PV-panels sub-array connected to the respective combiner box.
6. Securely attach combiner boxes to the building structure.

B. Special Considerations

1. The DC branch circuits connecting from each PV combiner box to the respective PV panels and PV panel sub-array strings, shall not be less than 3 #10 AWG (including dedicated ground) copper 600 volt DC, metal wireway but in no case less capacity than shown on the drawings.
2. The DC – homerun circuit to the respective inverter DC-input, from each PV combiner box to the respective building DC disconnect shall not be less than 3#1 AWG copper (including dedicated ground) 600 volt DC, in 2.0" conduit, but in no case less capacity than shown on the drawings.

3.05 PV PANELS

A. Panel Orientation

1. The PV-array installation true-south with tilted position is intended to provide maximum optimal output performance.

B. Installation

1. Install and connect PV panels as recommended by the manufacturer. Do not drill holes in solar panels, use factory pre-drilled holes and factory identified mounting and adhesive attachment locations on the PV panels.
2. The interconnections configurations of individual photovoltaic panels using series connection and parallel connection, into strings of sub-arrays and sub-arrays into complete arrays using combiner boxes, shall comply with the recommendations of the PV panels and inverters manufacturers.
3. The PV panel DC voltages for open circuit, DC voltages for loaded circuits and DC voltage for short circuits shall be configured to match the operating voltage range of the inverter for automatic start-operate-stop functions.
4. Under all conditions, the DC input and output voltages shall never exceed 600 volts between any DC sources or any two DC circuit conductors. At temperatures ranging from minus 40 degrees centigrade through positive 100 degrees centigrade.
5. For each identical rated inverter, the quantity of PV panels shall be the same on each sub-array string. All of the PV panels on the same sub-array string shall be installed with adjacency to each other and also with the same directional orientation, to reduce unbalanced DC current losses.
6. Provide sunlight blocker opaque covers on all PV panels, until such time the panels are installed, circuits installed and connected and inverters are operational. The intent of this requirement is to prevent sunlight generated electrical power, until the PV system is tested and ready for operation, to prevent damage to the PV panels from open circuit voltages, and possible incorrect untested circuit connections.

C. Thin Film Photovoltaic Panels/Modules

1. Installation, attachment and bonding of the PV panels/modules to the roof shall comply with all the manufacturer's requirements and instructions.
2. Submit installation procedure documentation to manufacturer to activate PV manufacturer's 25 year warranty. Submit six (6) copies to OWNER'S Representative.
3. The installers shall be trained and certified by the Manufacturer.
4. Completely and thoroughly chemically clean the roof just prior to the installation of the PV panel/modules on the roof.
5. Do no puncture, cut/trim or physically modify the PV panels/modules.

6. Arrange the PV panels/modules in a uniform configuration with a pattern, placing the respective wireway positioned at the "terminal" end of the PV assembly strings.
7. Provide the PV panel/module wiring and PV string connections inside the PV wireway.
8. Install PV wireways and debris guards, securely attach to roof and building. Comply with all manufacturer's recommendations.

3.06 PHOTOVOLTAIC MONITORING SYSTEM

A. Installation

1. Install and connect the monitoring system, data logger, graphic video display and sensors/transducers as recommended by manufacturer. Surface wall mount unless shown otherwise on contract drawings.
2. Install photovoltaic data logger at the location of the inverter, unless shown otherwise in the contract documents.
3. Provide an educational, full color graphic block diagram showing install date, capacity, written PV system operation description, the photovoltaic system components, component functions and direction of energy flows. Encase in visually transparent plastic, nominal graphic size 18" x 24". Place the graphic as part of the public video graphic display at the "Public-Kiosk".

B. Special Considerations

1. Provide circuits concealed in walls, floors, ceilings. Connect from the data logger to the following locations:
 - a. Separate 1.0" conduit homerun to each sensor/ transducer, with circuit conductors as recommended by respective manufacturers.
 - b. 1.0" conduit homerun to LAN nearest IDF/MDF terminal with three (3) Category-6, 4 pair UTP ANSI/EIA/TIA-568b copper wire, for LAN and telephone.
 - c. 1.25" conduit homerun to electric utility company meter (NET-metering).
 - d. 1.0" conduit 3#10 homerun to 120 volt 60Hz AC 20 ampere branch circuit panel, for electrical operating and control power.
 - e. Two (2) 1.25" conduit homerun to "Public Kiosk" video graphic display, and to respective inverter local video graphic display, with circuit conductors as recommended by manufacturer.
 - f. Two 1.0" conduit homerun connect to respective inverter, with circuit conductors as recommended by manufacturer, for status, control and alarms.
 - g. 0.5" conduit homerun to each PV combiner box for monitoring DC circuit faults, with circuit conductors as recommended by manufacturer.

3.07 EQUIPMENT MOUNTING HARDWARE

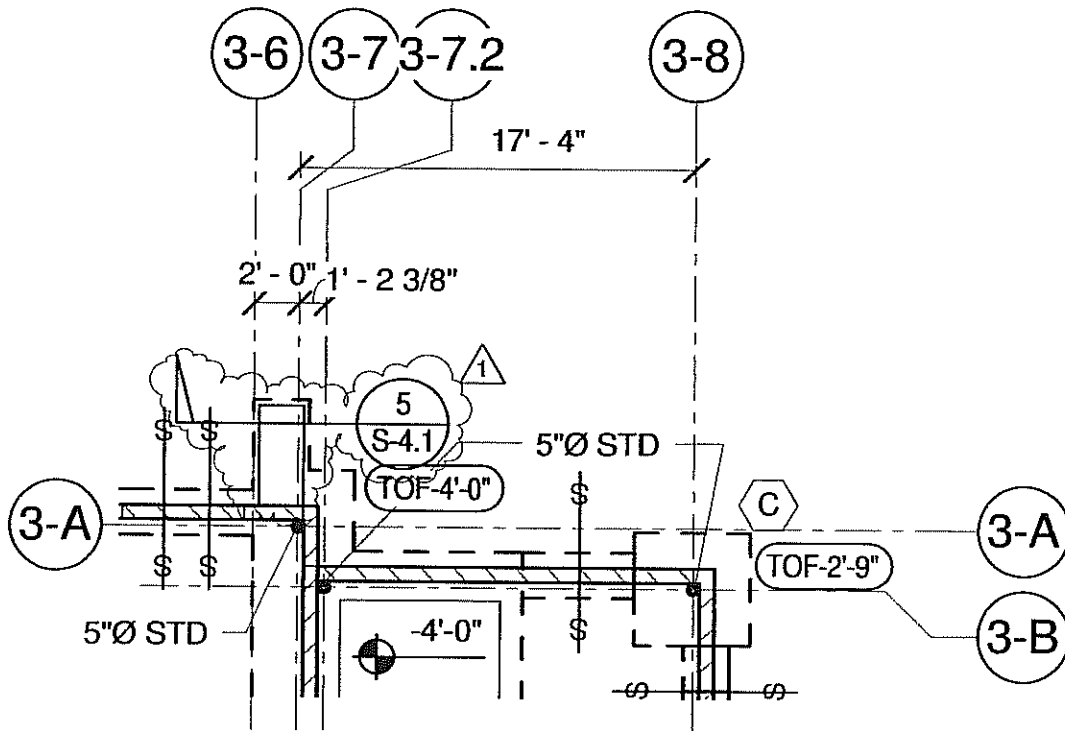
A. Installation

1. Install and connect equipment mounting hardware as recommended by the manufacturer.
2. Install and connect the photovoltaic power system equipment on the equipment mounting hardware.
3. The complete installation shall ensure all mounting components, hardware and attachments shall be rated for the equipment deadweight, equipment effective wind area and attached miscellaneous equipment/raceways:
 - a. 100 Mile Per Hour (MPH) continuous winds plus 1,3 wind gust loading factor, effective area wind loading, wind downforce and wind uplift ratings.
 - b. Earthquake seismic Zone-4 rating.
 - c. Heavy-duty snow, roof debris and ice loading ratings.

B. Special Considerations

1. Provide continuous 1#10 AWG copper (600 volt) ground/ bond conductor interconnections to all equipment, PV panels, PV combiner boxes, equipment mounting hardware and inverters (common equipotential ground/bond). Install conductor in 0.5" conduit where exposed.
2. Adjust each PV panel mounting angle to the recommended azimuth angle and tilt angle.
3. Provide not less than 0.5" gap spacing (but not less than recommended by manufacturer) between adjacent PV panels, and metal roofs standing seams to allow for PV panel and roof thermal expansion and adhesive attachments of the PV panels to the metal roof pan
4. Provide all wiring and circuits for electrical power, equipment monitoring and control.

END OF SECTION



(A) BUILDING 3 - FOUNDATION PLAN
1/8" = 1'-0"



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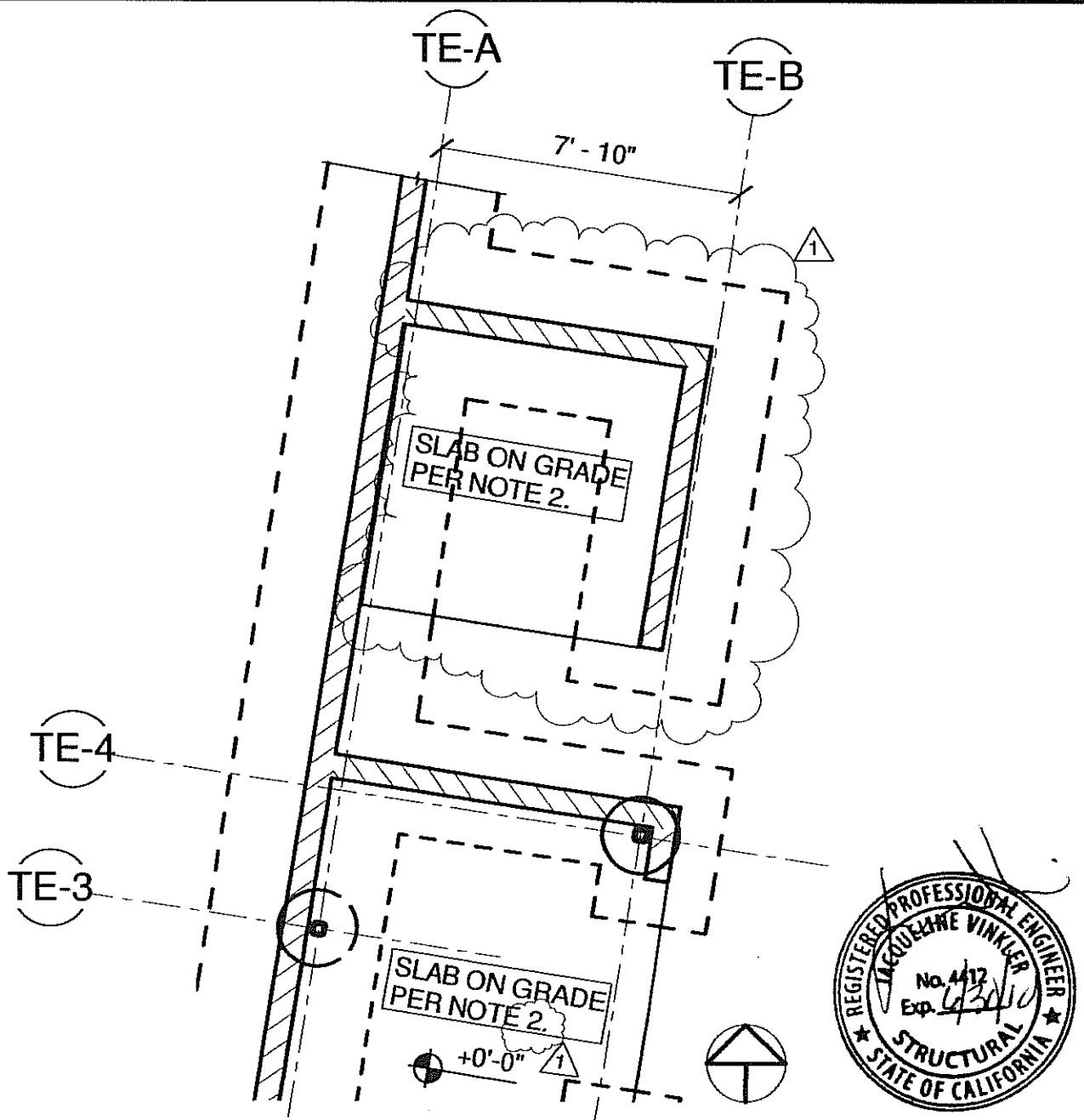
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 Revision: 1
 Scale: AS NOTED

SKS-1
 Sht. No. S-2.3.1



A TRASH ENCLOSURE - FOUNDATION PLAN
 1/4" = 1'-0"

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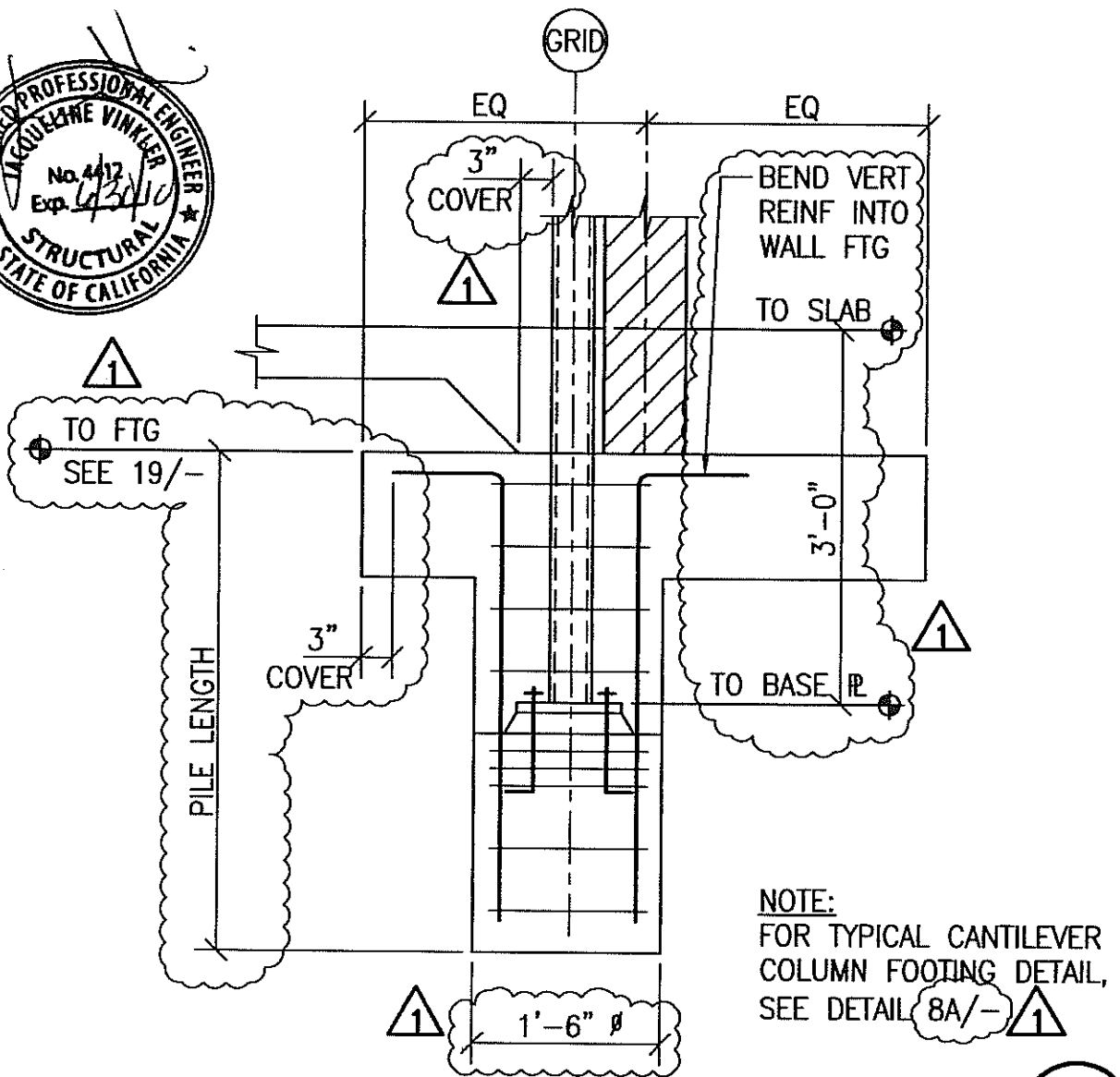
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SKS-2
 Sht. No. S-2.4.1



CANTILEVER COLUMN FOOTING ADJACENT TO CMU WALL

4

$3/4" = 1'-0"$

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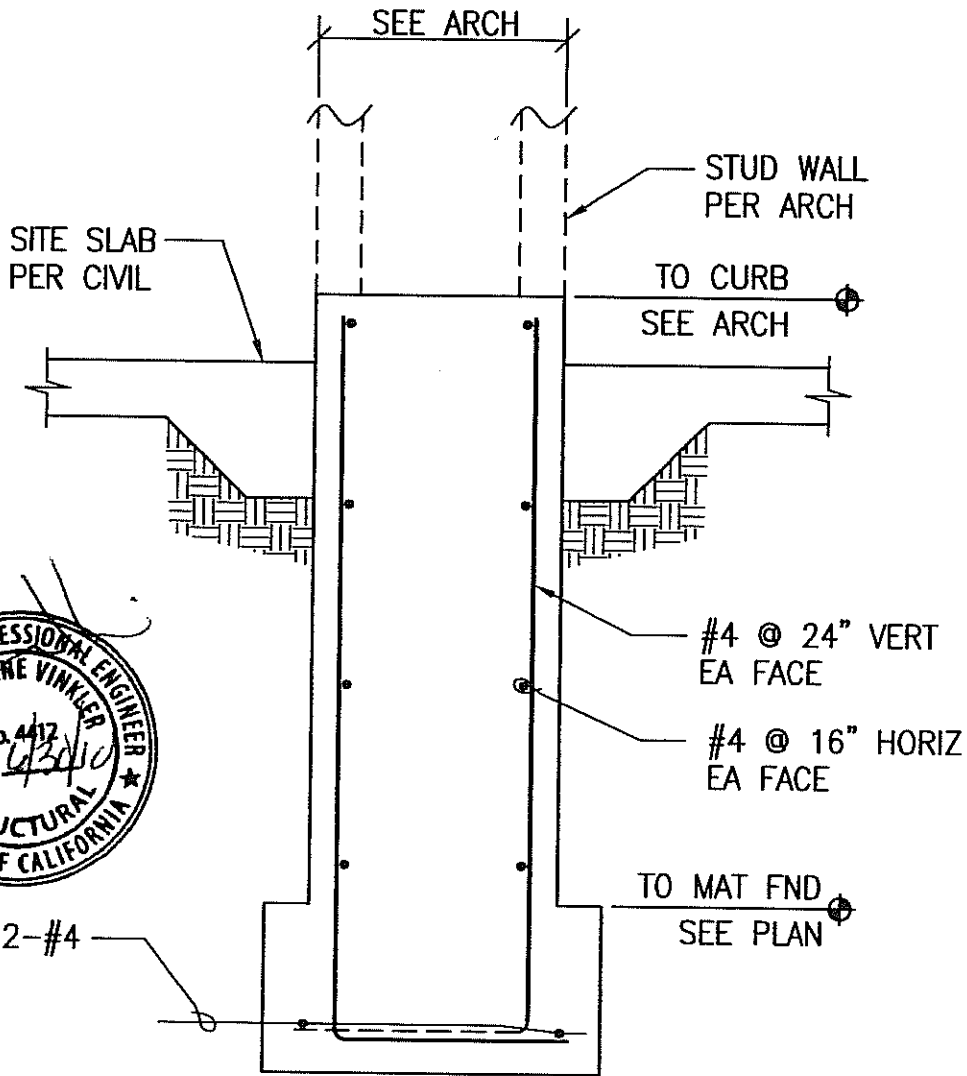
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FOOTING AT BUILDING #3 ARCHITECTURAL FIN WALL
 $3/4" = 1'-0"$

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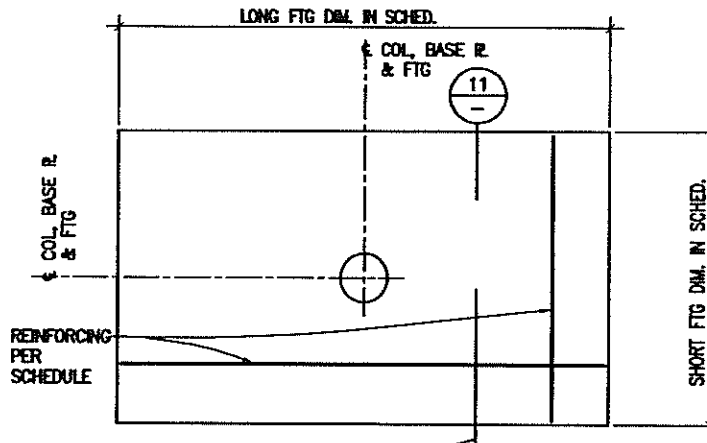
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 Scale: NONE

SKS-4

Sht. No. S-4.1

TYPE	FOOTING		REINFORCING	REMARKS
	SIZE	THICKNESS		
A	3'-0" SQ.	18"	3 - #5 EA WAY @ BOTTOM	-
B	4'-0" SQ.	18"	4 - #5 EA WAY @ BOTTOM	-
C	5'-0" SQ.	18"	5 - #5 EA WAY @ BOTTOM	-
D	6'-0" SQ.	18"	6 - #6 EA WAY @ BOTTOM	-
E	7'-0" SQ.	24"	7 - #6 EA WAY @ BOTTOM	-
F	9'-0" SQ.	24"	9 - #6 EA WAY @ BOTTOM	-
G	10'-0" SQ.	24"	11 - #6 EA WAY @ BOTTOM	-
H	1'-6" ∇	LENGTH 4'-0"	-	SEE DETAIL (BA) ∇
J	1'-6" ∇	LENGTH 5'-0"	-	SEE DETAIL (BB) ∇
K	1'-6" SQ	18"	3 - #4 EA WAY @ BOTTOM	-
L	2'-0" ∇	LENGTH 4'-0"	-	SEE DETAIL (BA) ∇

A INDICATES FOOTING PAD SIZE AND REINFORCING.



TYPICAL FOOTING PLAN DETAIL

FOOTING SCHEDULE

6



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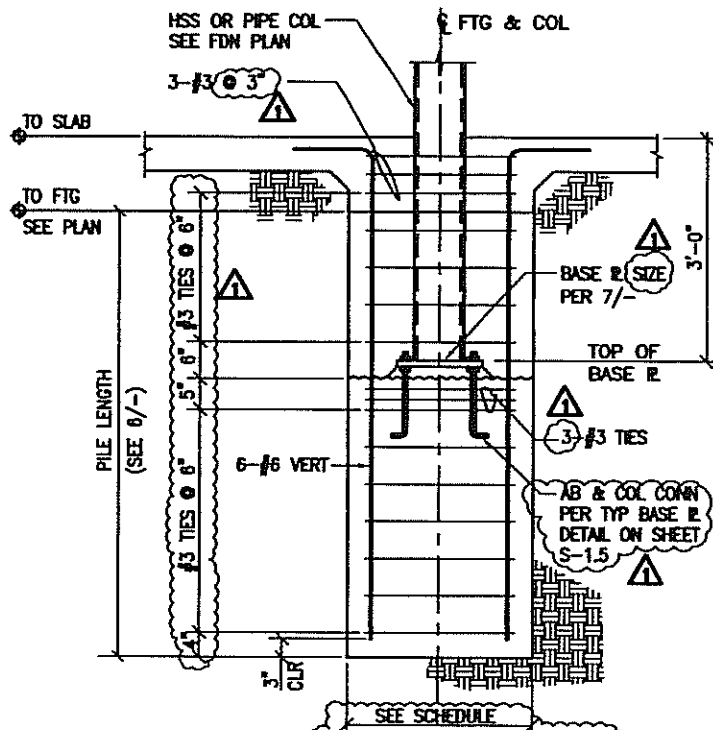
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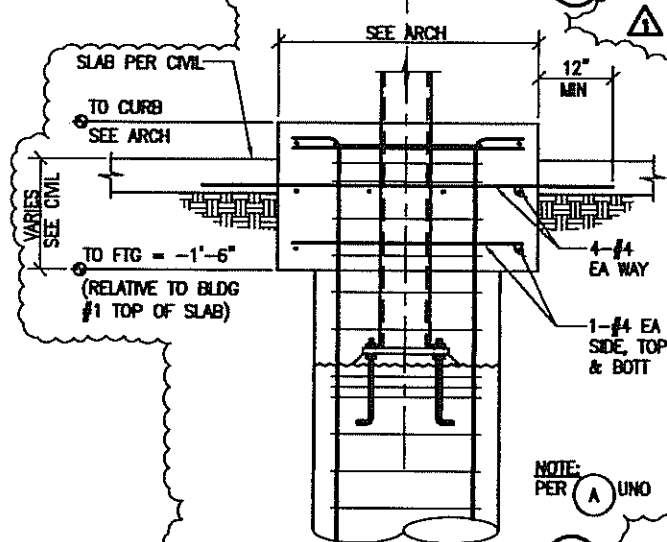
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 Scale: NONE

SKS-5



SECTION AT INTERIOR BUILDING SLAB



SECTION AT EXTERIOR SITE SLAB

CANTILEVER COLUMN FOOTING



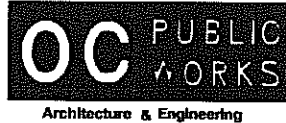
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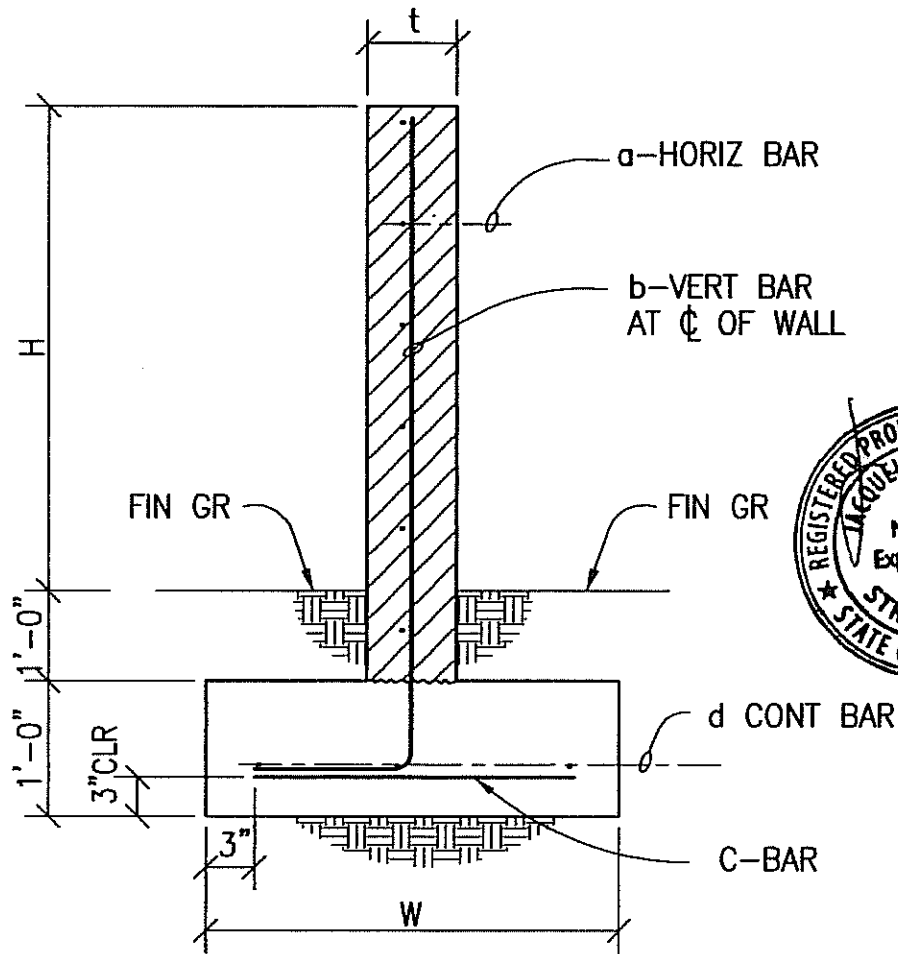
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 Revision: _____
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SKS-6

Sht. No. **S-4.1**

SHEET TITLE FOUNDATION SCHEDULE AND DETAILS

ADDENDUM 2



H	W	a	b	c	d	NOMINAL t
5'-6" TO 6'-6"	3'-0"	#5 @ 24"	#5 @ 24"	#5 @ 24"	3-#5	8"
6'-6" TO 8'-0"	4'-0"	#5 @ 24"	#5 @ 16"	#5 @ 24"	3-#5	8"
11'-6" TO 12'-6"	4'-6"	#5 @ 24"	#6 @ 16"	#5 @ 24"	3-#6	8"*

* FOR "H" > 11'-0", MASONRY f'm=2,500 psi.

FREESTANDING MASONRY WALL SCHEDULE

19

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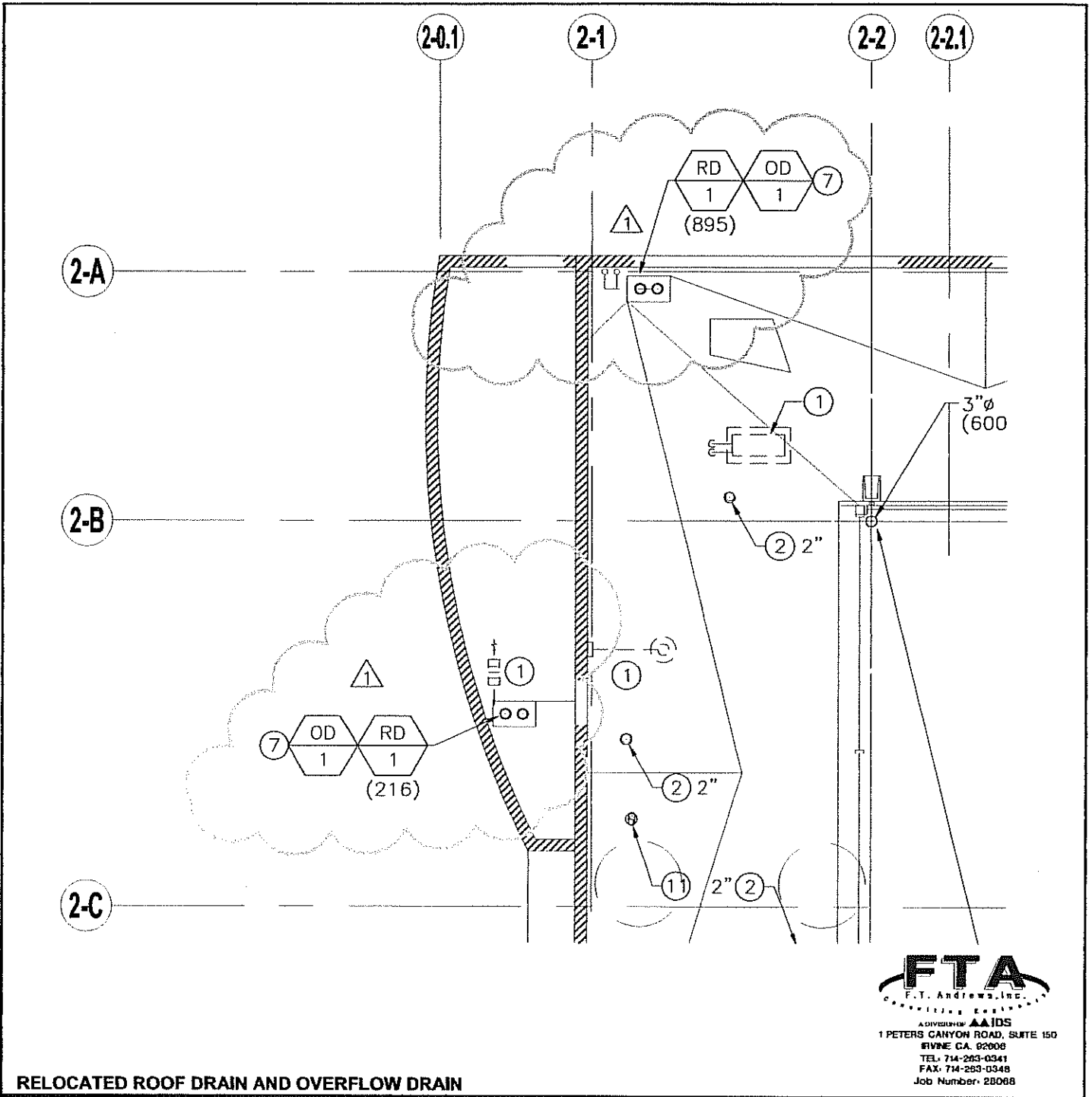
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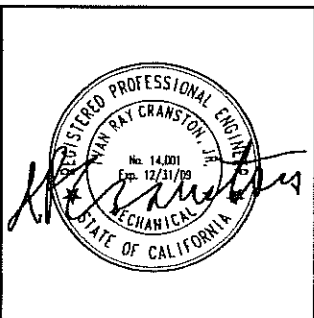
SKS-7

Sht. No. S-4.1



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 A DIVISION OF AIAIDS
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 TEL: 714-263-0341
 FAX: 714-263-0348
 Job Number: 2B068

RELOCATED ROOF DRAIN AND OVERFLOW DRAIN



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 401 SOUTH TUSTIN STREET
 ORANGE, CA 92866

Plan No.
 52333-03608

PROJECT No.
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County of Orange

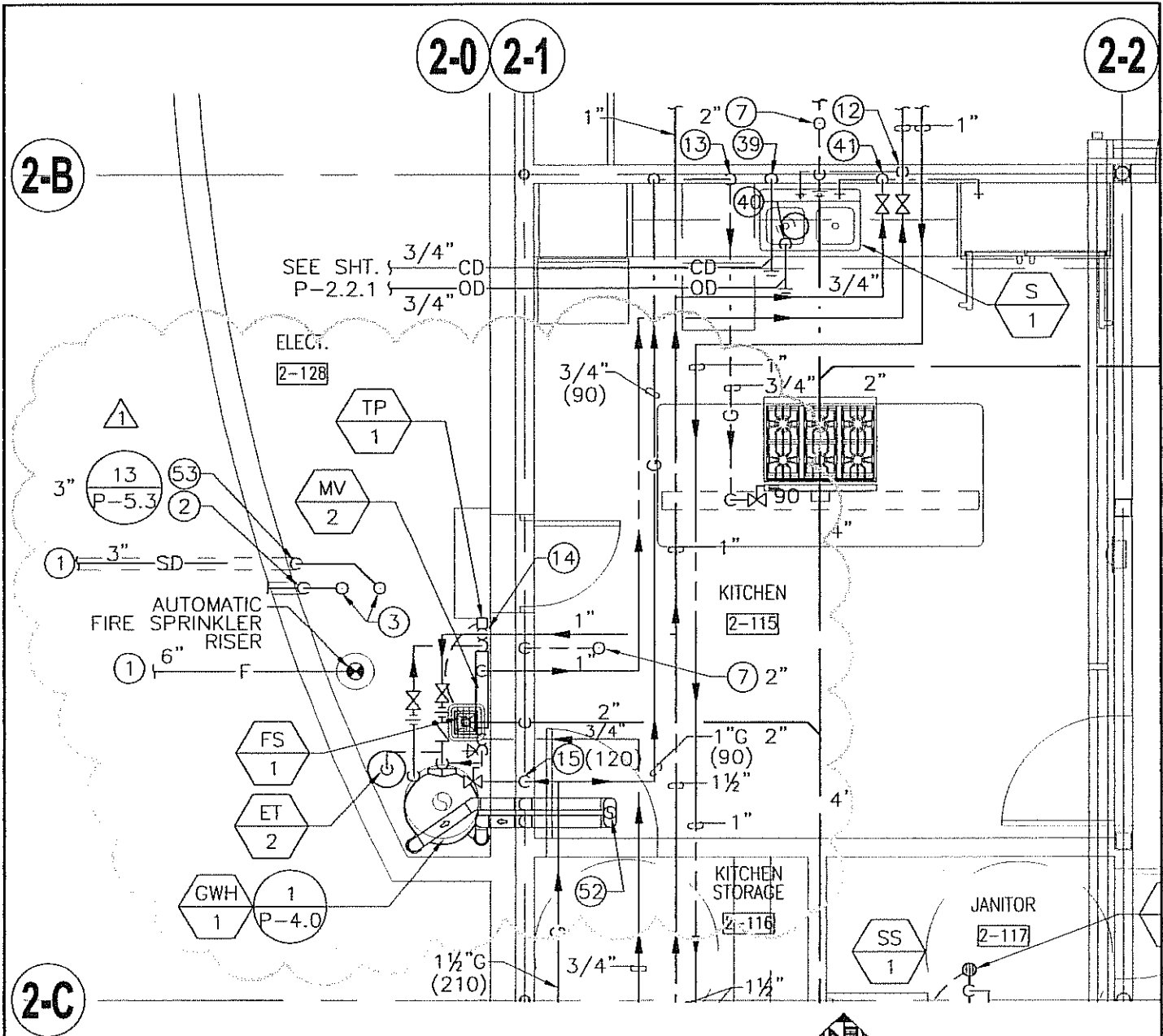
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SHEET TITLE **ADDENDUM 2 -**

Sht. No. **P-2.2.3**

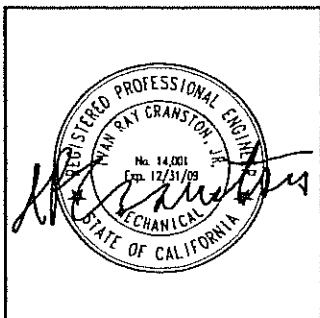


BUILDING 2 - PLUMBING ENLARGED PLAN

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

FTA
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Job Number: 25068

**RESIZED AND RELOCATED MIXING VALVE. RESIZED EXPANSION TANK
RELOCATED ROOF DRAIN AND OVERFLOW DRAIN**



**COUNTY OF ORANGE
HEALTH CARE AGENCY
401 SOUTH TUSTIN STREET
401 SOUTH TUSTIN STREET
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County of Orange

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