Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
03	Sac	5505		1	10

INDEX OF PLANS

SHEET NO.	DESCRIPTION
1	TITLE AND LOCATION MAP
STRUCTURE PLANS	
2	GENERAL PLAN AND LEGEND
3-6	ELECTRICAL PLANS
7-10	STRUCTURAL PLANS

THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

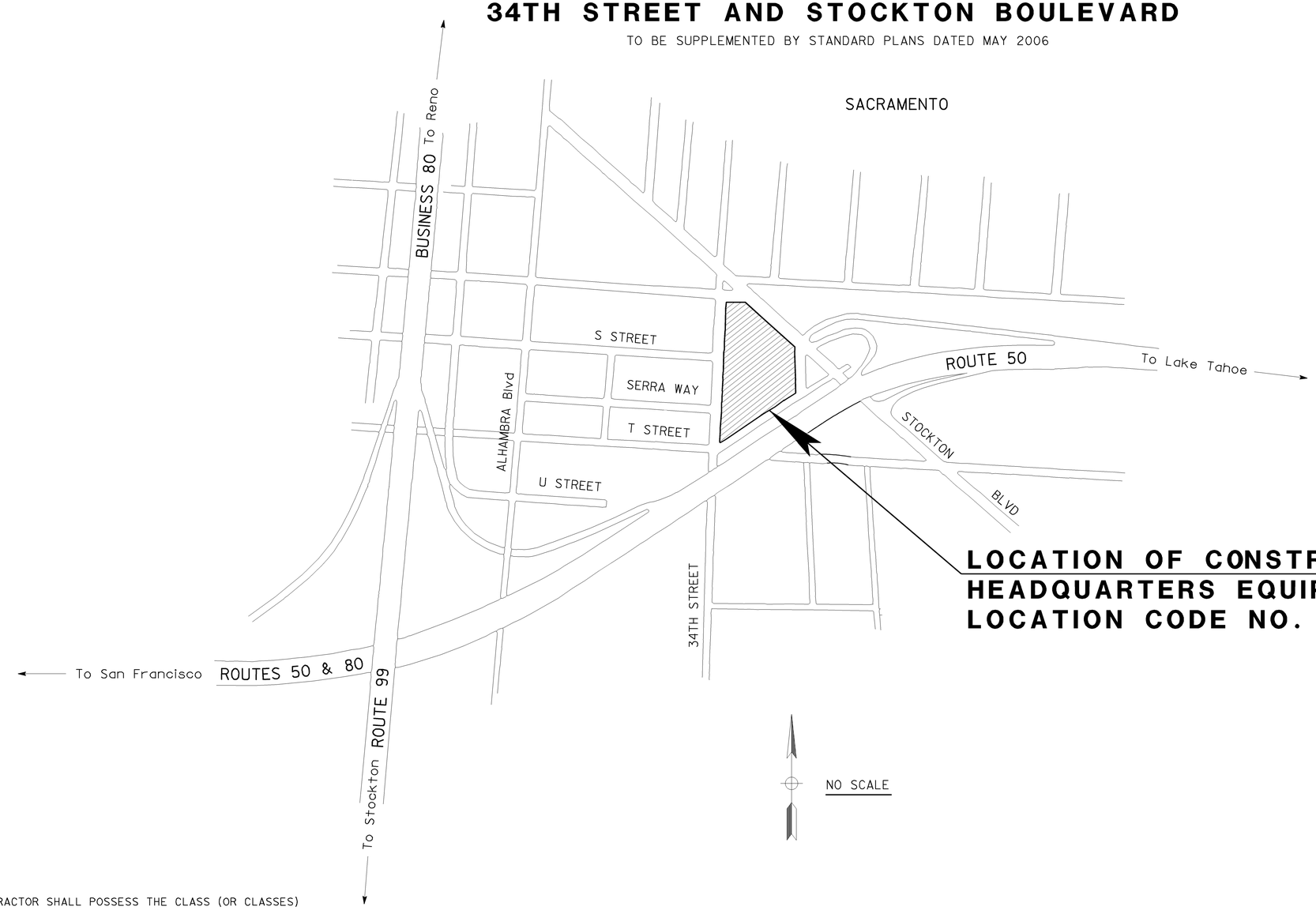
STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR BUILDING CONSTRUCTION IN SACRAMENTO COUNTY IN SACRAMENTO AT THE HEADQUARTERS OFFICE OF EQUIPMENT AT 34TH STREET AND STOCKTON BOULEVARD

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006

LOCATION MAP



LOCATION OF CONSTRUCTION
HEADQUARTERS EQUIPMENT SHOP
LOCATION CODE NO. 5505

CALIFORNIA STATE FIRE MARSHAL APPROVED
Approval of this plan does not authorize or approve any omission or deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.
Reviewed by: STEPHEN GUARINO
Approval date: 03-25-11

PHOTOVOLTAIC SYSTEMS
CSFM FILE # 14-34-11-0040

Tommy F. Lee 07-29-11
PROJECT ENGINEER DATE
REGISTERED ELECTRICAL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
TOMMY F. LEE
No. 18534
Exp. 12-31-12
ELEC
STATE OF CALIFORNIA

03-25-11
PLANS APPROVAL DATE

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THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

CONTRACT No.	03-0AA044
PROJECT ID	0300020248

PROJECT MANAGER CLARK PERRY
DESIGN ENGINEER ALAN TORRES

LAST REVISION 00-00-11 DATE PLOTTED => 07-SEP-2011 TIME PLOTTED => 13:58

DIST.	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Sac	5505		2	10

Tommy F. Lee 07-29-11
REGISTERED ELECTRICAL ENGINEER DATE

REGISTERED PROFESSIONAL ENGINEER
TOMMY F. LEE
No. 18534
Exp. 12-31-12
ELEC
STATE OF CALIFORNIA

03-25-11
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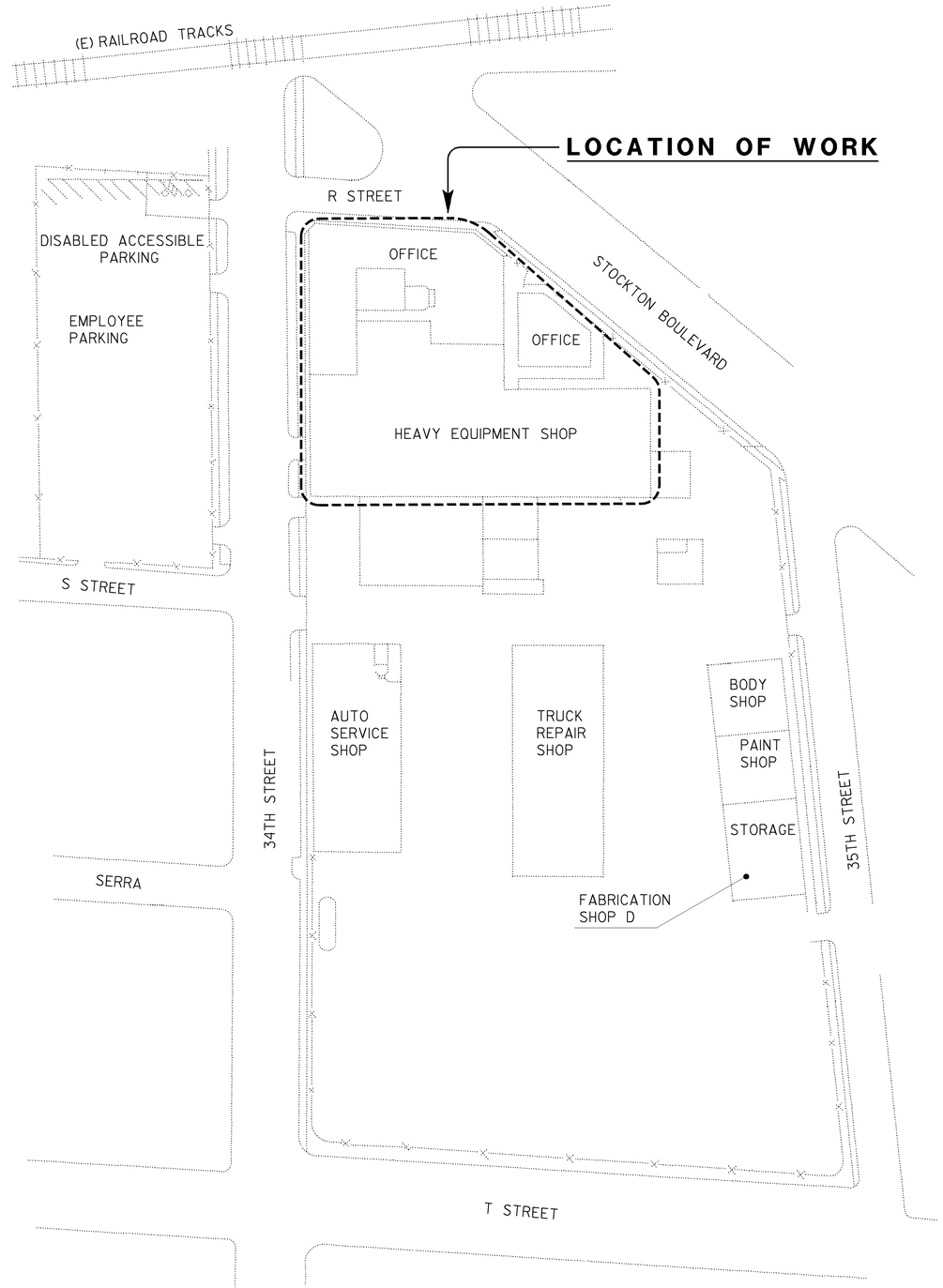
Reviewed by: STEPHEN GUARINO
Approval date: 03-25-11

INDEX OF SHEETS

SHEET No.	DESCRIPTION
GP	GENERAL PLAN AND LEGEND
	ELECTRICAL
EE-1	PARTIAL SITE PLAN
EE-2	SINGLE LINE DIAGRAM GRID-TIED PHOTOVOLTAIC SYSTEM
EE-3	ROOF PLAN
EE-4	ELEVATION AND DETAILS
ST-1	STRUCTURAL ROOF PLAN 1
ST-2	STRUCTURAL ROOF PLAN 2
ST-3	STRUCTURAL ROOF PLAN 3
ST-4	STRUCTURAL ROOF PLAN 4



SITE PLAN
NO SCALE

GRAPHIC SYMBOLS

SYMBOL	DESCRIPTION
(2) 1/2"C, PVC, 2#12	CONDUCTOR INFO (PER CONDUIT); CONDUIT TYPE; CONDUIT SIZE; NUMBER OF CONDUITS (NO NUMBER INDICATES ONE CONDUIT)
—MC—	CONDUIT, RIGID STEEL, UNDERGROUND
—PVC—	CONDUIT, POLYVINYL CHLORIDE, UNDERGROUND
	CONDUIT, FLEXIBLE
	CONDUIT, TURN UP
	CONDUIT, TURN DOWN
A / EE-2	SECTION/ELEVATION LETTER; SHEET NUMBER
1 / EE-2	DETAIL NUMBER; SHEET NUMBER
—E—E—	EXISTING CONDUIT AND CONDUCTORS-TO REMAIN UNLESS OTHERWISE NOTED
—×—×—	CONDUIT EXPOSED
BC	INSTALL PULL BOX IN EXISTING CONDUIT RUN.
	CIRCUIT BREAKER, SINGLE POLE
	CIRCUIT BREAKER, DOUBLE POLE
	CONTACT, NORMALLY OPEN
	SWITCH, DOUBLE-POLE
	FUSE
	GROUNDING ELECTRODE
	ENCLOSURE BOND

ABBREVIATIONS

A	AMPERES
AC	ALTERNATE CURRENT
C	CONDUIT
DC	DIRECT CURRENT
E	EXISTING
G	GROUND
JB	JUNCTION BOX
MC	METALIC CONDUIT
MIN	MINIMUM
MT	EMPTY CONDUIT
P	POLE
PB	PULL BOX
PB(T)	TRAFFIC RATED PULL BOX
PTC	PV USA TEST CONDITIONS
PVC	POLYVINYL CHLORINE
PV	PHOTOVOLTAIC
RSC	RIGID STEEL CONDUIT
STC	STANDARD TEST CONDITIONS
TYP	TYPICAL
TTB	TELEPHONE TERMINAL BOARD
V	VOLT

APPLICABLE CODES

2010 California Building Code (CBC) Title 24, Part 2 CCR

2010 California Electrical Code (CEC) Title 24, Part 3 CCR

2010 California Fire Code (CEC) Title 24, Part 9 CCR

EXISTING BUILDING DATA

2007 CBC

BUILDING/ PORTION	OCCUPANCY GROUP	CONSTRUCTION TYPE	ALLOWABLE AREA	ACTUAL AREA	YEAR BUILDING BUILT
(E) STORAGE BUILDING	SI	V-B	2,542SF	14,150 SF	1963

* ROOF DATA : CORRUGATED ASBESTOS ROOFING OVER 9 1/2" PURLINS

THIS DRAWING ACCURATE FOR ELECTRICAL WORK ONLY

DESIGN SUPERVISOR
DESIGN ENGINEER

	BY	CHECKED
DESIGN	Tommy F. Lee	Jesse S. Sandhu
DETAILS	Tommy F. Lee	Jesse S. Sandhu
QUANTITIES	Tommy F. Lee	Jesse S. Sandhu

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
ELECTRICAL-MECHANICAL-WATER AND WASTEWATER DESIGN

BRIDGE NO. 24M5505
POST MILE

EQUIPMENT SHOP PHOTOVOLTAIC SYSTEM
GENERAL PLAN AND LEGEND

SHEET **GP**

DOES SD Imperial Rev. 1/07

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT 3596
PROJECT NUMBER & PHASE 0300020248S

DISREGARD PRINTS BEARING EARLIER REVISION DATES → REVISION DATES (PRELIMINARY STAGE ONLY) 12/20/10 3/17/11 7/29/11 SHEET OF

07-SEP-2011 13:58
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DIST.	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Sac	5505		3	10

Tommy F. Lee 07-29-11
REGISTERED ELECTRICAL ENGINEER DATE

REGISTERED PROFESSIONAL ENGINEER TOMMY F. LEE No. 18534 Exp. 12-31-12 ELEC STATE OF CALIFORNIA

03-25-11
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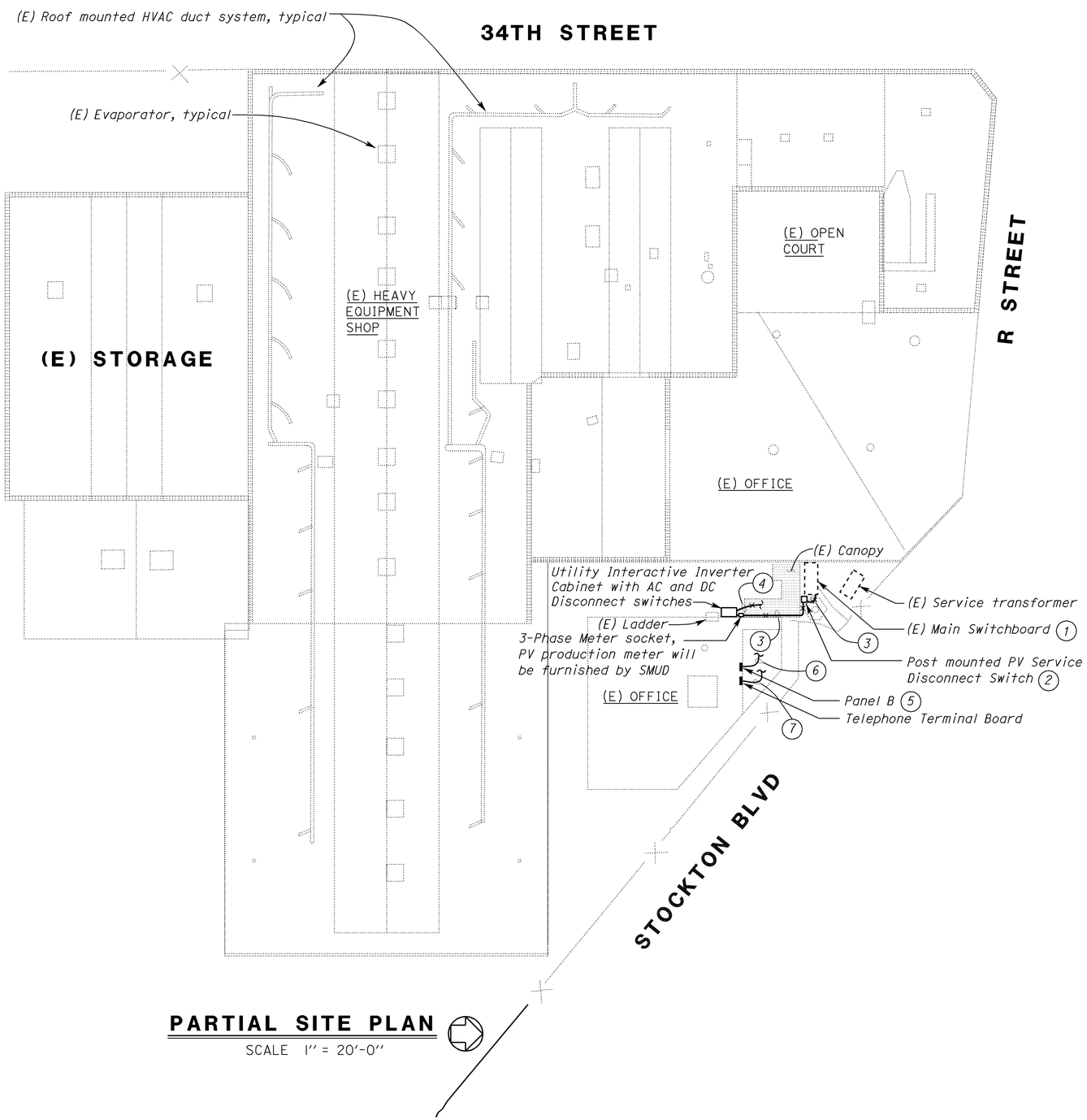

PARTIAL SITE PLAN

SCALE 1" = 20'-0"

General Notes:

A. *The Contractor shall verify true north prior to installation of photovoltaic system.*

B. *All AC/DC feeder conductors and equipment grounding conductors shall be sized to meet or exceed the following:*

- *Total net voltage drop of the photovoltaic system from photovoltaic source to the existing Switchboard shall not exceed 2%.*
- *Upon occurrence of any kind of fault at any point in the system, over current protective devices shall trip within ½ cycle.*

C. *Not all existing electrical/mechanical equipment and conduit systems are shown.*

D. *Location of all existing equipment and conduit systems as shown are approximate only. Contractor shall verify the exact location of all equipment and conduit systems in the field where required.*

E. *For Photovoltaic System Single Line Diagram, see sheet EE-2.*

F. *For Graphic Symbols and Abbreviations, see sheet GP.*

G. *Core drill through existing wall for conduit penetration as required. Patch, seal and match to existing as required after installation.*

H. *Install conduit system over existing canopy in between the buildings.*

I. *Metering System and Communication device/Remote monitoring system are not shown for clarity. For locations of these devices, see elevation A on sheet EE-4.*

Notes:

1. *Existing Main Switchboard is Challenger Powermaster, 480/277-Volt, 3-phase, 4-wire, switchboard with 1600-Ampere main circuit breaker. Drill and tap line side bus bars supplying the main breaker and terminate PV service entrance conductors on the bus bars. Install suitable lugs for terminating conductors as required. Install screw on type sign on the main switchboard with letter height of ½" to read "THIS PANELBOARD FED BY MULTIPLE SOURCES (UTILITY AND SOLAR SYSTEM)".*

2. *Post mounted PV service disconnect switch shall be NEMA 3R type, 3-pole, 600-volt rated disconnect with 150-ampere fuse and ampere interrupt rating (AIC) of 65, 000 symmetrical at 480-Volt. PV service disconnect switch shall be suitable for use as service entrance equipment. Adjacent to the PV service disconnect switch, install screw on type nameplate with letter height of ¼" to read "PHOTOVOLTAIC SERVICE ENTRANCE". Posts for mounting PV service disconnect switch shall be 1⅞" minimum construction channels embedded minimum 18 inch in concrete. Provide cross bracing as required and as directed by the engineer.*

3. *4"C, RSC, four conductors; three phase, and one equipment grounding conductor. Equipment grounding conductor shall be the same size as phase conductor.*

4. *(3) 2"C, MC, with DC conductors and equipment grounding conductor from combiner boxes to Utility-Interactive Inverter cabinet.*

5. *Install 20A/1P dedicated branch circuit breaker inside existing Panel B. Install nameplate "Solar Monitoring System" next to the circuit breaker.*

6. *Install ½"C, 2#12, 1#12G to Communication device/Remote monitoring system installed outside of existing office building. Conduit shall be installed concealed inside the office building and exposed on outside.*

7. *Install ½"C, Category 6 cable to Communication device/Remote monitoring system at outside of existing office building. Conduit shall be installed concealed inside the office building and exposed on outside.*

THIS DRAWING ACCURATE FOR ELECTRICAL WORK ONLY

	BY	CHECKED
DESIGN	Tommy F. Lee	Jesse S. Sandhu
DETAILS	Ed D. Tapalla 1/10	Tommy F. Lee
QUANTITIES	Tommy F. Lee	Jesse S. Sandhu

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
ELECTRICAL-MECHANICAL-WATER AND WASTEWATER DESIGN

BRIDGE NO. 24M5505
POST MILE

EQUIPMENT SHOP PHOTOVOLTAIC SYSTEM
PARTIAL SITE PLAN

SHEET **EE-1**

DOES SD Imperial Rev. 1/07

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT 3596
PROJECT NUMBER & PHASE 0300020248S

DISREGARD PRINTS BEARING EARLIER REVISION DATES → 12/10/10 3/14/11 3/28/11 7/29/11

REVISION DATES (PRELIMINARY STAGE ONLY) SHEET OF

16-SEP-2011 08:40
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DIST.	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Sac	5505		4	10

Tommy F. Lee 07-29-11
REGISTERED ELECTRICAL ENGINEER DATE

REGISTERED PROFESSIONAL ENGINEER TOMMY F. LEE No. 18534 Exp. 12-31-12 ELEC STATE OF CALIFORNIA

03-25-11
PLANS APPROVAL DATE

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Reviewed by: STEPHEN GUARINO
Approval date: 03-25-11

Photovoltaic Module

PV modules shall be minimum 280 (STC) watt, polycrystalline silicon cell type module with interconnection connectors rated for 90°C. PV modules shall be UL 1703 listed with a maximum system voltage of 600 VDC. PV module manufacturer shall be one of those manufacturers listed as eligible California Solar Initiative (CSI) PV module manufacturer.

Photovoltaic Array Circuit Combiner Box

PV array circuit combiner box shall be factory assembled, 600 VDC rated combiner box with fuse for all PV input circuits, two isolated DC bus bars, ground bus bar, all enclosed inside NEMA 3R lockable hinged cover enclosure. The combiner box shall be UL 1741 listed.

PV array circuit combiner box shall have the following components:
- DIN Rail mounted touch safe fuse holders with fuse rated for 600 VDC.
- Positive DC bus bar, Negative DC bus bar and ground bus bar.
- DIN rail mounted Grid-Tie surge arrestor: The surge arrestor shall be Type 1 heavy duty surge protector and rated to withstand 40 kA (8/20 micro second) induced transient surge type and compatible to use with grounded PV arrays.
- Plastic shield guards to enclose DC buses from all sides.

Communication Device/Remote Monitoring System

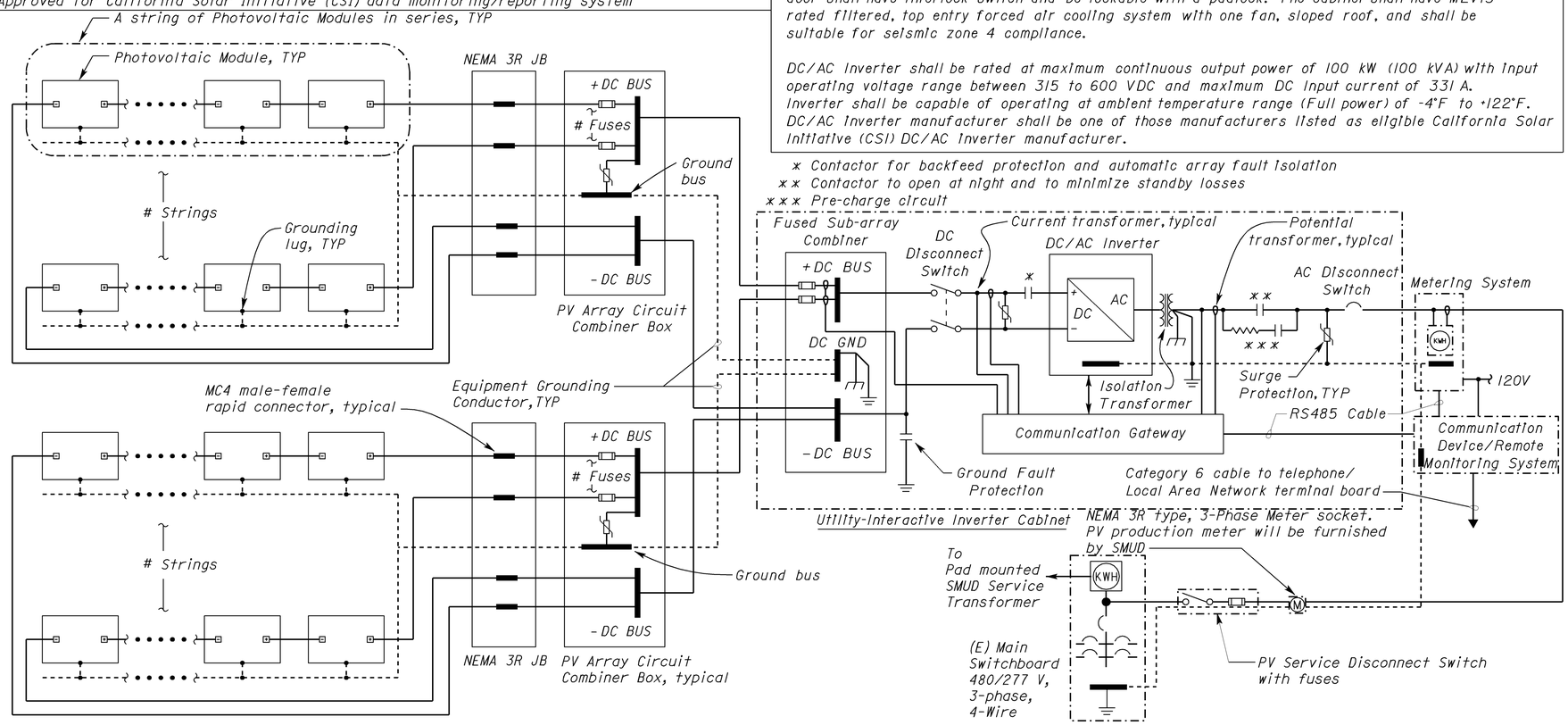
Data acquisition system shall be in NEMA 3R enclosure with the following equipment:
- main and I/O processors,
- 32MB RAM and 16MB flash
- 2x16 character LCD
- LAN/modem communications
- Protocols:Modbus/RTU, Modbus/TCP, TCP/IP
- Serial port with RS-485 Modbus
- Inputs with multiple modes: voltage, current, resistance, pulse and status
- 120 VAC input
- Approved for California Solar Initiative (CSI) data monitoring/reporting system

Utility Interactive Control Cabinet

Utility Interactive Inverter cabinet shall be outdoor type, factory assembled system consisting of the following equipment:
- NEMA 3R Enclosure.
- 100 kW/100 kVA, 480/277 V, 3-phase, 4-wire at a power factor of 0.99 or greater.
- Fused Sub-array Combiner with minimum of 4 array inputs for positive DC, negative DC, and DC ground bus bars. Positive array inputs fuse size to match loading.
- Built-in DC and AC disconnect switches size to match loading.
- Integrated output isolation type transformer.
- Ground Fault Protection.
- Integrated AC and DC Surge Protections.
- Integrated AC and DC contactors.
- Pre-charge circuit.
- Current and potential transformers
- Human Machine Interface (HMI). AC/DC Inverter's HMI shall be equipped with LCD and keypad displaying main menu. HMI main menu shall display system monitoring, status and faults and operation. Monitoring menu shall display system status, metering, daily, weekly and monthly energy production. Status and faults menu shall display status messages, system output, and number of faults. Operation menu shall display control and settings.
- Communication Gateway with datalogging and communications for remote monitoring system with Internet connectivity (TCP/IP). Communication gateway shall be UL listed.
- Sub-array monitoring for detailed array performance monitoring of each array inside sub-array combiner of the Utility-Interactive Inverter cabinet
- AC Ground bus bars.

Enclosure shall be NEMA 3R, 14-Gauge, and powder-coated standard factory finish steel enclosure. All screws, latches, hinge pins and similar hardware shall be stainless steel. HMI, AC and DC disconnect switches, and equipment rating labels shall be mounted on the exterior door. Exterior door shall have interlock switch and be lockable with a padlock. The cabinet shall have MEVI3 rated filtered, top entry forced air cooling system with one fan, sloped roof, and shall be suitable for seismic zone 4 compliance.

DC/AC Inverter shall be rated at maximum continuous output power of 100 kW (100 kVA) with input operating voltage range between 315 to 600 VDC and maximum DC input current of 331 A. Inverter shall be capable of operating at ambient temperature range (Full power) of -4°F to +122°F. DC/AC Inverter manufacturer shall be one of those manufacturers listed as eligible California Solar Initiative (CSI) DC/AC Inverter manufacturer.



General Notes:

A. Provide and install all necessary warning labels/markings per Article 690 of California Electrical Code (CEC) and the State Fire Marshal's guideline for solar PV installation.

B. Solar PV installation shall comply with the latest guideline from California Department of Forestry & Fire Protection, Office of the State Fire Marshal and latest Program Handbook from California Solar Initiative (CSI).

C. For graphic symbols and abbreviations, see GP.

Metering System

Metering System shall be in NEMA 3R enclosure and shall consists of the following equipment:
- Revenue Grade Production Meter
  - 0.2% Class Revenue Certifiable Energy and Demand Metering
  - Multifunction Electrical Measurement
  - RS485 Modbus Protocols
  - 3 Line LED display
- Power transducer
  - an accuracy of +/- 0.1% or better for volts and amps
  - 0.2% for power and energy functions
- Power supply
- Din Rail Mount Dataline RS485 Surge Protection, IEC61643-21 compliance

Photovoltaic System Requirements

Photovoltaic System complete design and installation details inclusive of all Engineering calculations shall be signed by a Professional Engineer of the respective field (both Electrical and Civil Engineering) in the State of California shall be submitted for approval by the Contractor. The PV design shall meet or exceed the following requirements;

1) Total designed capacity of photovoltaic system at existing Equipment Storage Building shall be minimum 100 kW CEC-AC rating. Number of PV module per string shall be arranged in a manner to meet or exceed the following:
   - Maximum system voltage based on lowest excepted ambient temperature at the site (Voc maximum on coldest day) shall be no less than 1% of the inverter's maximum input DC voltage range.
   - Maximum system power voltage based on average high ambient temperature at the site (Vmp on warmest day) shall be 20% greater than the inverter's minimum input DC voltage range.

2) Photovoltaic system module row spacing shall be designed to prevent shading from adjacent module.

3) All wiring except at module interconnection shall be concealed inside conduit system.

4) Photovoltaic system modules structural support system shall be designed to withstand wind forces of 85-mile per hour.

5) Photovoltaic system wiring and protective devices shall meet or exceed the requirements of all applicable codes.

6) PV Array Circuit Combiner Boxes locations as shown are arbitrary only. Contractor shall install the combiner boxes at locations that best suit the photovoltaic system strings layout.

7) PV modules installed on different slopes and/or orientation shall not be part of the same string except PV modules installed on flat roof.

THIS DRAWING ACCURATE FOR ELECTRICAL WORK ONLY

PHOTOVOLTAIC SYSTEM

	BY	CHECKED
DESIGN	Tommy F. Lee	Jesse S. Sandhu
DETAILS	Tommy F. Lee	Jesse S. Sandhu
QUANTITIES	Tommy F. Lee	Jesse S. Sandhu

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
ELECTRICAL-MECHANICAL-WATER AND WASTEWATER DESIGN

BRIDGE NO. 24M5505
POST MILE

EQUIPMENT SHOP PHOTOVOLTAIC SYSTEM
SINGLE LINE DIAGRAM
GRID-TIED PHOTOVOLTAIC SYSTEM

SHEET **EE-2**

DOES SD Imperial Rev. 1/07

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT 3596
PROJECT NUMBER & PHASE 0300020248S

DISREGARD PRINTS BEARING EARLIER REVISION DATES → REVISION DATES (PRELIMINARY STAGE ONLY) 12/20/10 3/24/11 3/28/11 7/29/11 SHEET OF

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DIST.	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Sac	5505		5	10

Tommy F. Lee 07-29-11
REGISTERED ELECTRICAL ENGINEER DATE

REGISTERED PROFESSIONAL ENGINEER TOMMY F. LEE No. 18534 Exp. 12-31-12 ELEC STATE OF CALIFORNIA

03-25-11
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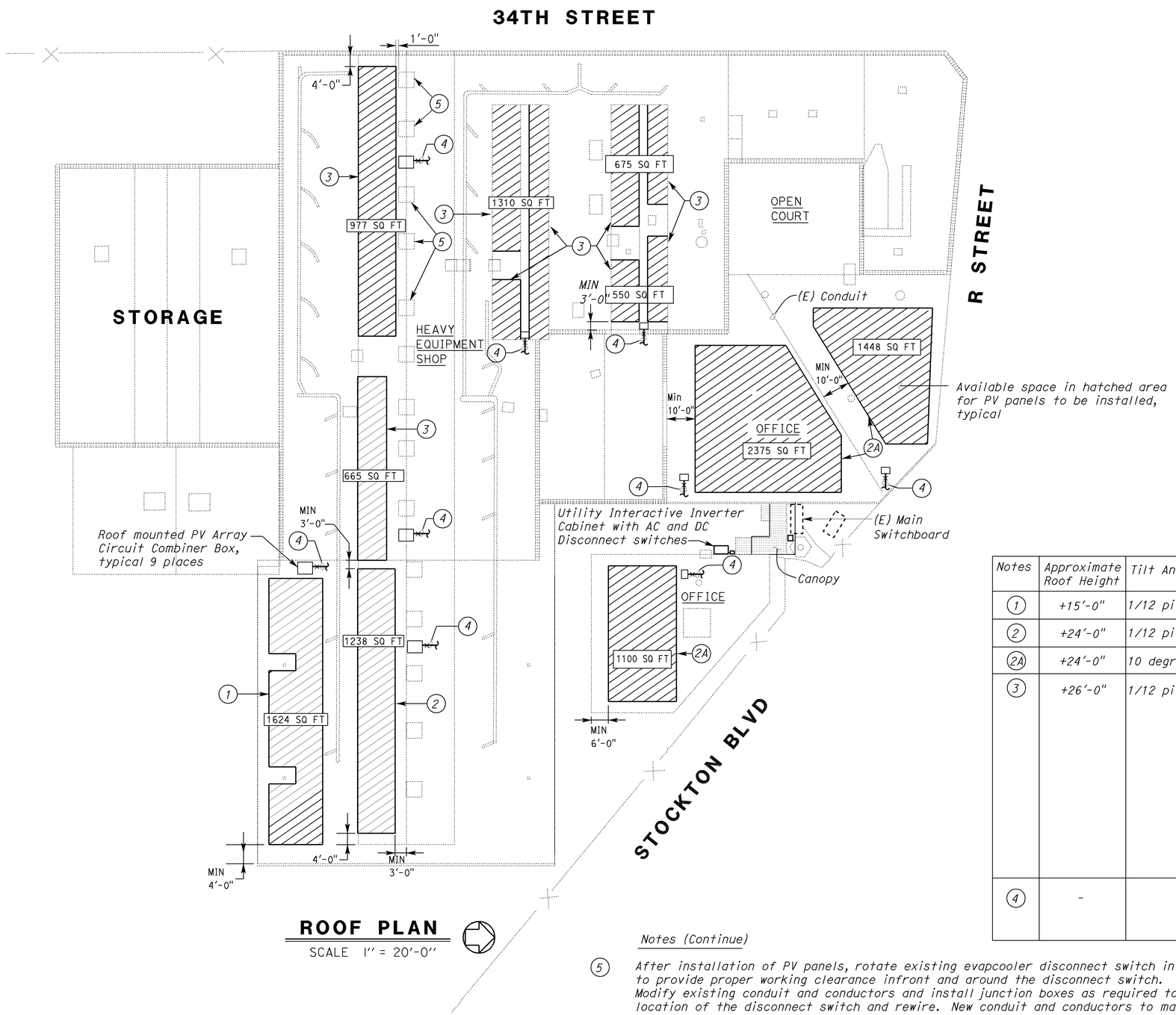
Reviewed by: FRANCIS SOLICH
Approval date: 09-15-11



ROOF PLAN

SCALE 1" = 20'-0"

General Notes:

A. *Provide and install approved conduit support on top of the roof to support conduit system and junction boxes. Conduit support shall be one-piece and non metallic type. For conduit support details, see Detail 1 on sheet EE-4.*

B. *All exposed conduits shall be galvanized rigid steel, with minimum size of ¾".*

C. *Size conduits to allow for 50% future capacity.*

D. *No DC wiring except underneath the PV module connector shall be exposed.*

E *Use type CGB connectors at conductor/cable terminations at junction boxes.*

F. *DC conduit/conductors between photovoltaic modules and photovoltaic Array Circuit Combiner Boxes are not shown.*

G. *For Graphic Symbols and Abbreviations, see GP sheet.*

H. *Provide and install necessary warning labels/markings per Article 690 of California Electrical Code (CEC) and the State Fire Marshal's guideline for solar photovoltaic installation.*

I. *Install MC4 male-female rapid connectors to connect USE/USE-2 conductors and PV strings positive and negative terminals. No splicing inbetween the connectors and combiner boxes shall be allowed.*

Notes	Approximate Roof Height	Tilt Angle	PV Installation Method
1	+15'-0"	1/12 pitch	Install photovoltaic panels on a self ballasting type racking system. Photovoltaic panels shall be installed facing due south. For photovoltaic self ballasting rack mounting and for Structural support requirement, see Detail 2 on sheet EE-4 and sheets ST-1 and ST-2.
2	+24'-0"	1/12 pitch	
2A	+24'-0"	10 degree	
3	+26'-0"	1/12 pitch	- Install photovoltaic panels on a racking system facing due south. - The required number of anchoring pedestals ONLY for supporting the PV System in this area has already been installed/anchored to the existing roofing and are flashed waterproof by the State of California. The anchoring pedestals (2-piece standoffs Part No. 310557) are manufactured by UNIRAC. In the event additional pedestal are necessary for supporting the proposed PV system, provide and install pedestals as required with the exception that these pedestals should not be anchored to the existing roofing. Additional pedestals required can rest on existing roofing with sacrificial membrane in-between pedestal flange and the roofing material. - For approximate location of existing anchoring pedestals, see plan sheet ST-3 & 4.
4	-		2"C, RSC, DC conductors and equipment grounding conductor from photovoltaic Array Circuit Combiner Box to Utility Interactive Inverter Cabinet.

Notes (Continue)

5 *After installation of PV panels, rotate existing evapcooler disconnect switch in a manner to provide proper working clearance infront and around the disconnect switch. Modify existing conduit and conductors and install junction boxes as required to suit relocated location of the disconnect switch and rewire. New conduit and conductors to match existing.*

THIS DRAWING ACCURATE FOR ELECTRICAL WORK ONLY

DESIGN	BY Tommy F.Lee	CHECKED Jesse S.Sandhu	
DETAILS	BY Ed D.Tapalla 1/10	CHECKED Tommy F.Lee	
QUANTITIES	BY Tommy F.Lee	CHECKED Jesse S.Sandhu	

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
ELECTRICAL-MECHANICAL-WATER AND WASTEWATER DESIGN

BRIDGE NO. 24M5505
POST MILE

EQUIPMENT SHOP PHOTOVOLTAIC SYSTEM
ROOF PLAN

SHEET **EE-3**

DOES SD Imperial Rev. 1/07

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT 3596
PROJECT NUMBER & PHASE 0300020248S

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REVISION DATES (PRELIMINARY STAGE ONLY) SHEET OF

16-SEP-2011 08:41

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Tommy F. Lee 07-29-11
REGISTERED ELECTRICAL ENGINEER DATE

REGISTERED PROFESSIONAL ENGINEER
TOMMY F. LEE
No. 18534
Exp. 12-31-12
ELEC
STATE OF CALIFORNIA

03-25-11
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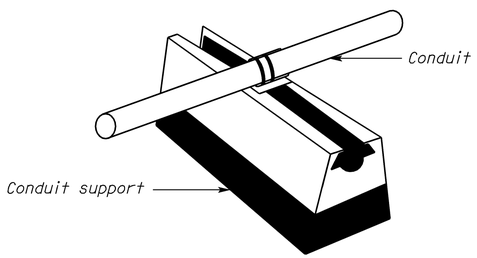
Approval date: 03-25-11

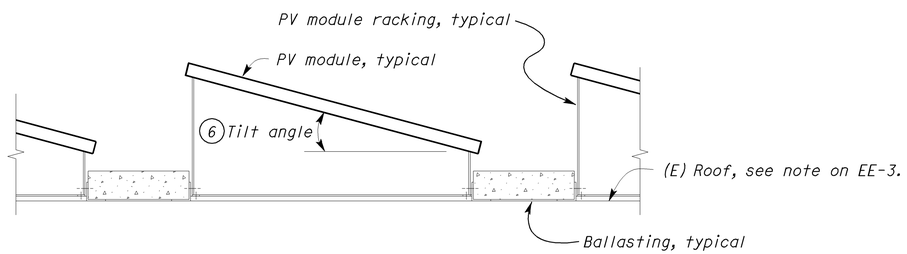


1 ROOF MOUNTED CONDUIT SUPPORT

NO SCALE

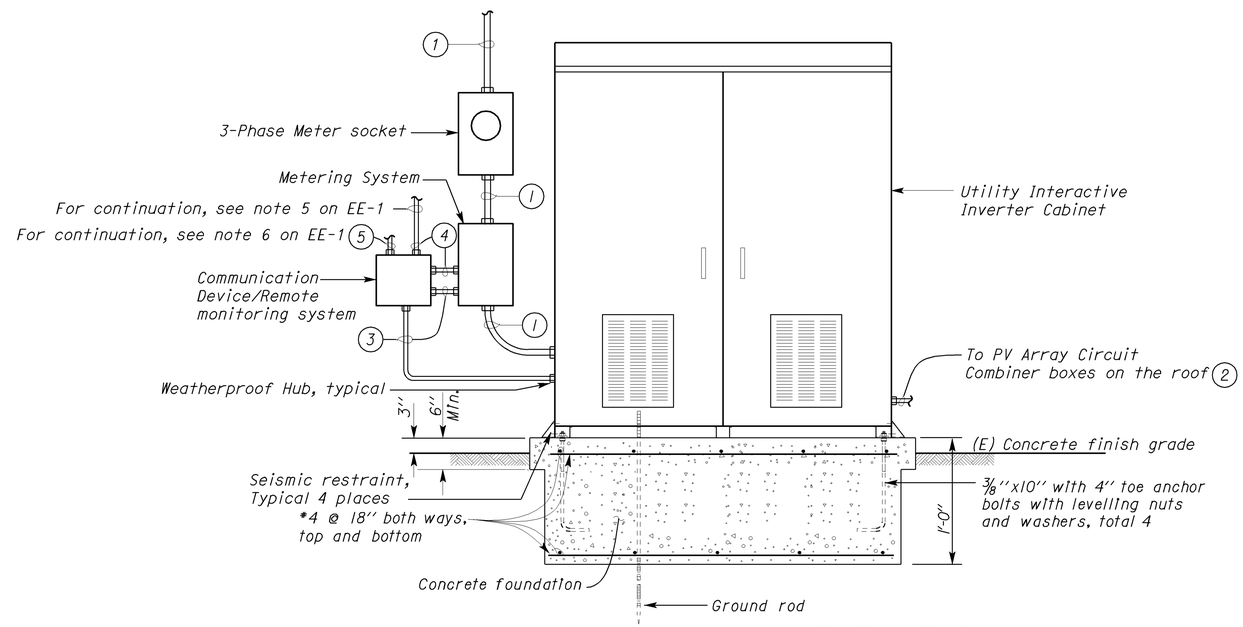
Notes:

1. *4"C, Four conductors; three phase, and one equipment grounding conductor to existing Main switchboard via photovoltaic Service Disconnect Switch.*
2. *(9) 2"C, RSC with DC conductors and equipment grounding conductor from photovoltaic Array Circuit Combiner Boxes on the roof.*
3. *½''C, RS485 modbus cable as required.*
4. *½"C, 2#12, 1#12G*
5. *½''C, Category 6 cable to existing telephone terminal board.*
6. *For tilt angle requirement on photovoltaic panel installation, see Notes on sheet EE-3.*



2 SELF-BALLASTED PANEL DETAIL

NO SCALE



A ELEVATION

NO SCALE

THIS DRAWING ACCURATE FOR ELECTRICAL WORK ONLY

	BY	CHECKED
DESIGN	Tommy F.Lee	Jesse S.Sandhu
DETAILS	Tommy F. Lee	Jesse S.Sandhu
QUANTITIES	Tommy F.Lee	Jesse S.Sandhu

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
ELECTRICAL-MECHANICAL-WATER AND WASTEWATER DESIGN

BRIDGE NO. 24M5505
POST MILE

EQUIPMENT SHOP PHOTOVOLTAIC SYSTEM
SINGLE LINE DIAGRAM
GRID-TIED PHOTOVOLTAIC SYSTEM

SHEET **EE-4**

DOES SD Imperial Rev.1/07

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT 3596
PROJECT NUMBER & PHASE 0300020248S

DISREGARD PRINTS BEARING EARLIER REVISION DATES
REVISION DATES (PRELIMINARY STAGE ONLY) 12/10/10 3/11/11 3/18/11 7/29/11
SHEET OF

16-SEP-2011 08:41
06_ee_4.dgn

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Sac	5505		7	10

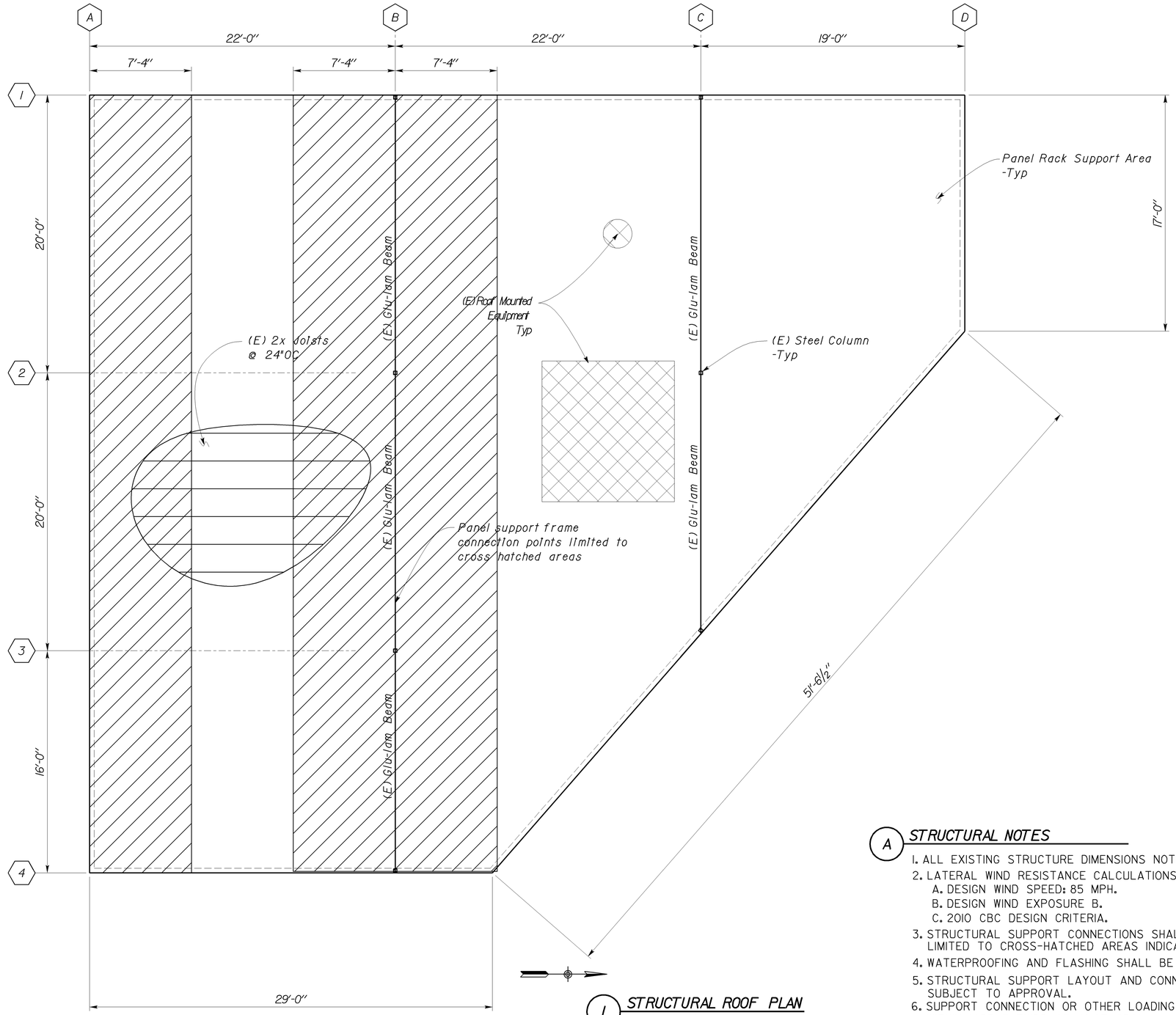
Brian T. Sutliff 02-03-11
REGISTERED STRUCTURAL ENGINEER DATE

REGISTERED PROFESSIONAL ENGINEER
Brian T. Sutliff
No. 3862
Exp. 3-31-12
STRUCTURAL
STATE OF CALIFORNIA

03-25-11
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

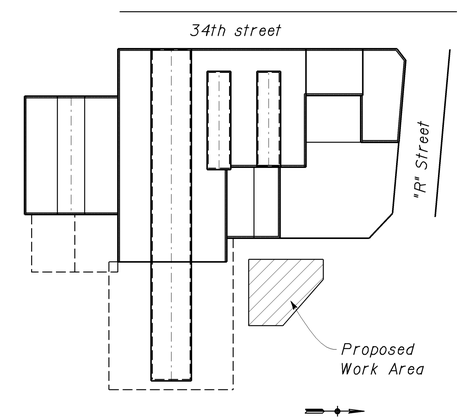
CALIFORNIA STATE FIRE MARSHAL APPROVED
Approval of this plan does not authorize or approve any omission or deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.
Reviewed by: STEPHEN GUARINO
Approval date: 03-25-11



1 STRUCTURAL ROOF PLAN
Scale 1/4" = 1'-0"

A STRUCTURAL NOTES

1. ALL EXISTING STRUCTURE DIMENSIONS NOTED ARE APPROXIMATE.
2. LATERAL WIND RESISTANCE CALCULATIONS SHALL BE BASED ON:
   A. DESIGN WIND SPEED: 85 MPH.
   B. DESIGN WIND EXPOSURE B.
   C. 2010 CBC DESIGN CRITERIA.
3. STRUCTURAL SUPPORT CONNECTIONS SHALL BE LIMITED TO CROSS-HATCHED AREAS INDICATED ON PLAN.
4. WATERPROOFING AND FLASHING SHALL BE SUBJECT TO APPROVAL.
5. STRUCTURAL SUPPORT LAYOUT AND CONNECTION SHALL BE SUBJECT TO APPROVAL.
6. SUPPORT CONNECTION OR OTHER LOADING NOT ALLOWED WITHIN MIDDLE THIRD OF JOIST SPAN.



KEY PLAN

	BY	CHECKED
DESIGN	Brian Sutliff	Brian Sutliff
DETAILS	Brian Sutliff	Brian Sutliff
QUANTITIES		

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
ARCHITECTURAL AND STRUCTURAL DESIGN

BRIDGE NO. 24M5505
POST MILE

EQUIPMENT SHOP PHOTOVOLTAIC SYSTEM
OFFICE AREA 1
STRUCTURAL ROOF PLAN I

SHEET **ST-1**

DOES SD Imperial Rev. 9/02

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT 3595
PROJECT NUMBER & PHASE 0300020248S

DISREGARD PRINTS BEARING EARLIER REVISION DATES 02-03-11

REVISION DATES (PRELIMINARY STAGE ONLY) SHEET OF

07-SEP-2011 13:58

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DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Sac	5505		8	10

Brian T. Sutliff 02-03-11
REGISTERED STRUCTURAL ENGINEER DATE

REGISTERED PROFESSIONAL ENGINEER
Brian T. Sutliff
No. 3862
Exp. 3-31-12
STRUCTURAL
STATE OF CALIFORNIA

03-25-11
PLANS APPROVAL DATE

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CALIFORNIA STATE FIRE MARSHAL APPROVED
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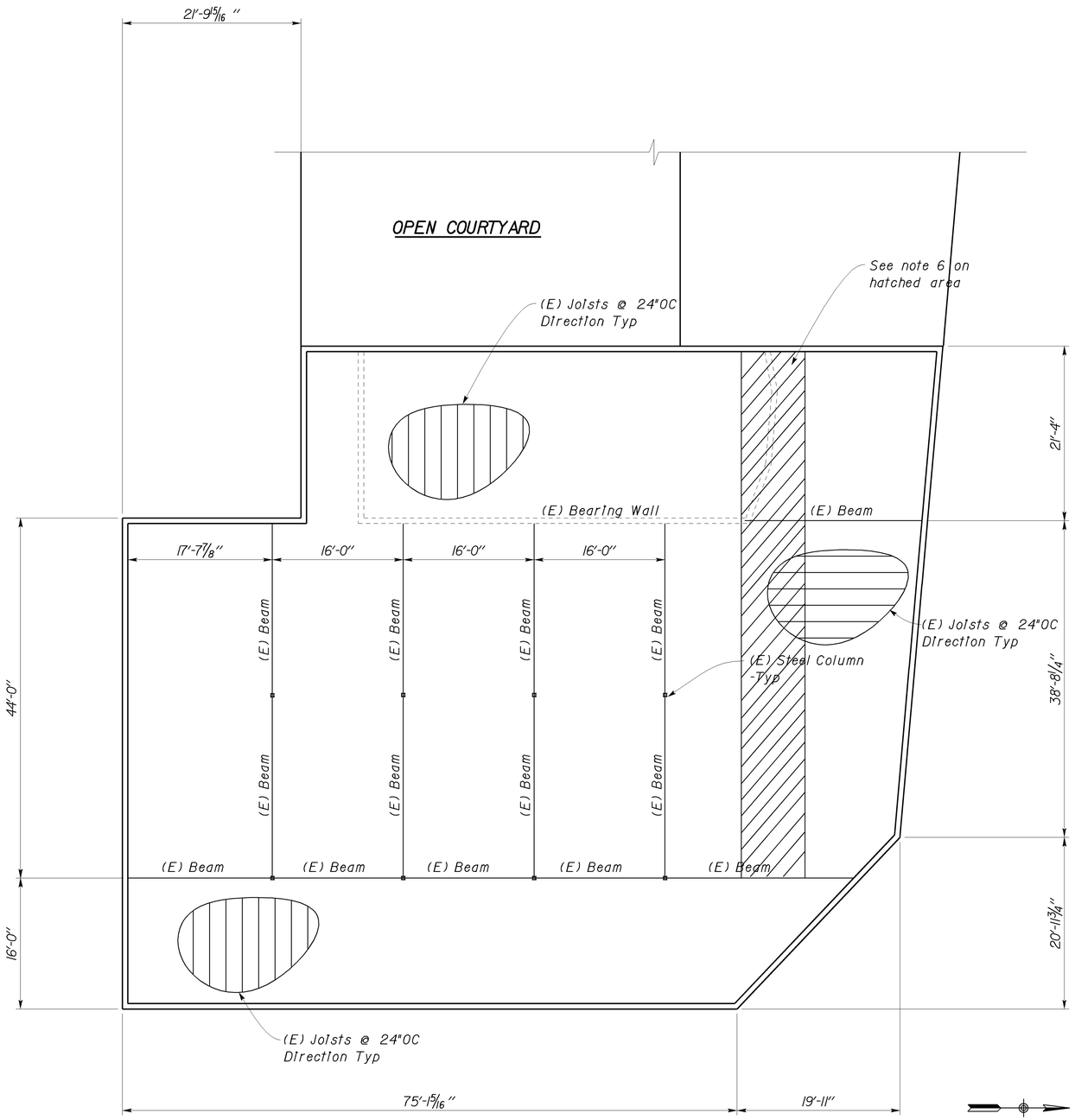
Reviewed by: STEPHEN GUARINO
Approval date: 03-25-11



1 STRUCTURAL ROOF PLAN
Scale 1/8" = 1'-0"

A STRUCTURAL NOTES

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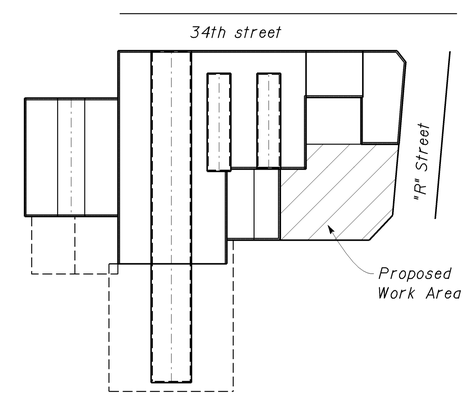
5. STRUCTURAL SUPPORT LAYOUT AND CONNECTION SHALL BE SUBJECT TO APPROVAL.
6. SUPPORT CONNECTION OR OTHER LOADING NOT ALLOWED WITHIN MIDDLE THIRD OF JOIST SPAN AS NOTED.



KEY PLAN

	BY	CHECKED
DESIGN	Brian Sutliff	Brian Sutliff
DETAILS	Brian Sutliff	Brian Sutliff
QUANTITIES		

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
ARCHITECTURAL AND STRUCTURAL DESIGN

BRIDGE NO. 24M5505
POST MILE

EQUIPMENT SHOP PHOTOVOLTAIC SYSTEM
OFFICE AREA 2
STRUCTURAL ROOF PLAN 2

SHEET **ST-2**

DOES SD Imperial Rev. 9/02

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT 3595
PROJECT NUMBER & PHASE 0300020248S

DISREGARD PRINTS BEARING EARLIER REVISION DATES → 02-03-11

REVISION DATES (PRELIMINARY STAGE ONLY) SHEET OF

07-SEP-2011 13:58
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DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Sac	5505		9	10

Brian T. Sutliff 02-03-11
REGISTERED STRUCTURAL ENGINEER DATE

REGISTERED PROFESSIONAL ENGINEER
Brian T. Sutliff
No. 3862
Exp. 3-31-12
STRUCTURAL
STATE OF CALIFORNIA

03-25-11
PLANS APPROVAL DATE

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CALIFORNIA STATE FIRE MARSHAL APPROVED
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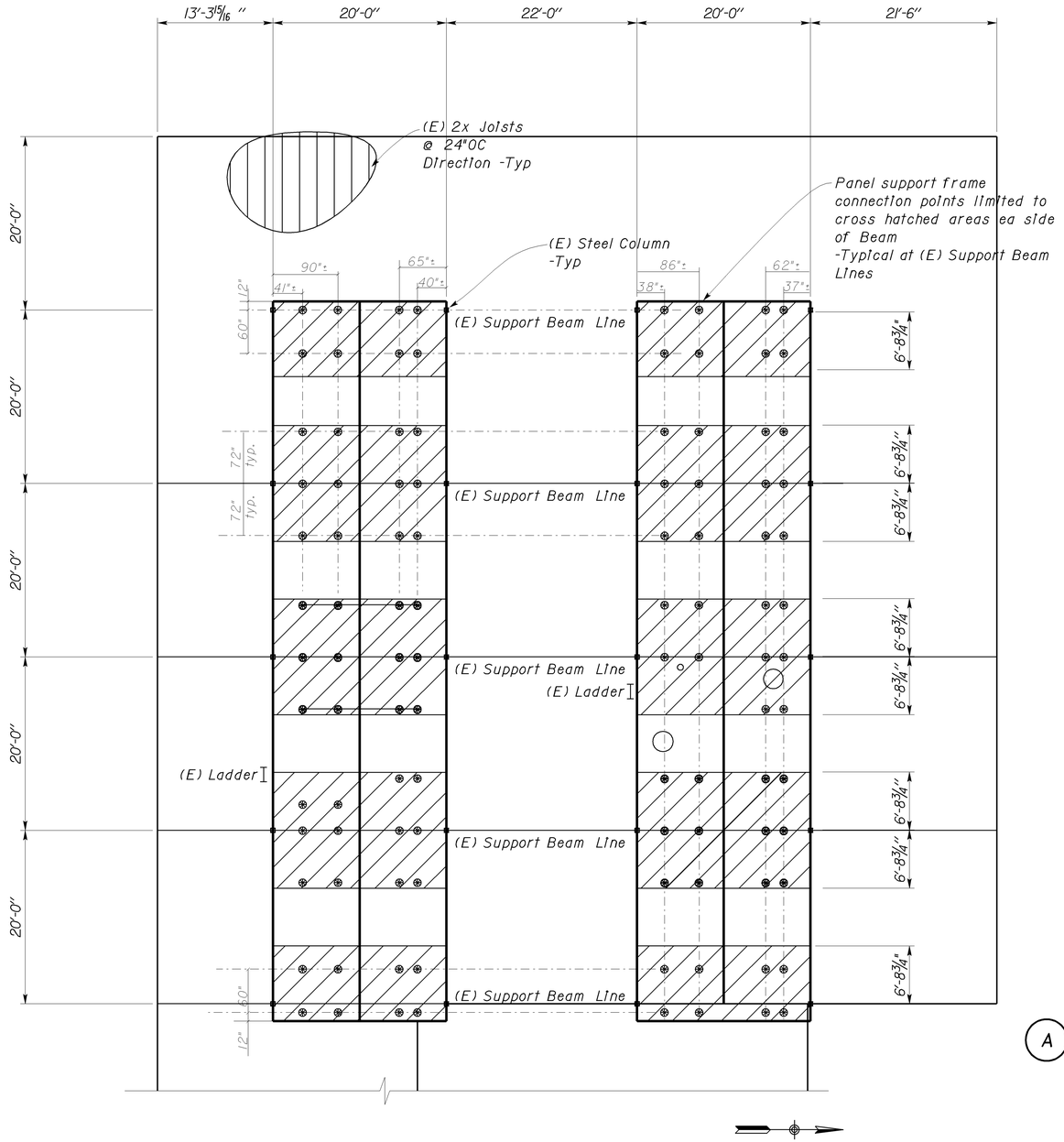
Reviewed by: STEPHEN GUARINO
Approval date: 03-25-11



1 STRUCTURAL ROOF PLAN
Scale 1/8" = 1'-0"

NOTE: All dimensions shown with a ± have a variance of about 1 1/2". This is due to the roof rafters being staggered.

A STRUCTURAL NOTES

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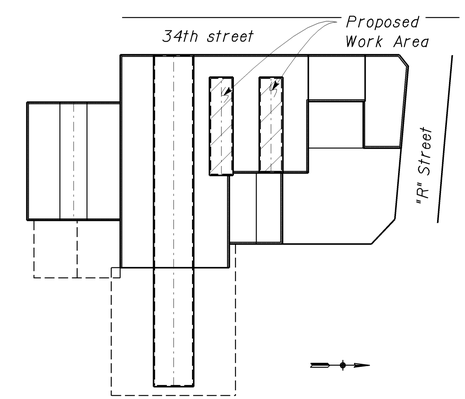

KEY PLAN

DESIGN	BY Brian Sutliff	CHECKED Brian Sutliff	
DETAILS	BY Brian Sutliff	CHECKED Brian Sutliff	
QUANTITIES	BY	CHECKED	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
ARCHITECTURAL AND STRUCTURAL DESIGN

BRIDGE NO. 24M5505
POST MILE

EQUIPMENT SHOP PHOTOVOLTAIC SYSTEM
SHOP AREA 1
STRUCTURAL ROOF PLAN 3

SHEET ST-3

DOES SD Imperial Rev. 9/02

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT 3595
PROJECT NUMBER & PHASE 0300020248S

DISREGARD PRINTS BEARING EARLIER REVISION DATES 02-03-10

REVISION DATES (PRELIMINARY STAGE ONLY) SHEET OF

07-SEP-2011 13:58

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DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	Sac	5505		10	10

Brian T. Sutliff 02-03-11
REGISTERED STRUCTURAL ENGINEER DATE

REGISTERED PROFESSIONAL ENGINEER
Brian T. Sutliff
No. 3862
Exp. 3-31-12
STRUCTURAL
STATE OF CALIFORNIA

03-25-11
PLANS APPROVAL DATE

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CALIFORNIA STATE FIRE MARSHAL APPROVED
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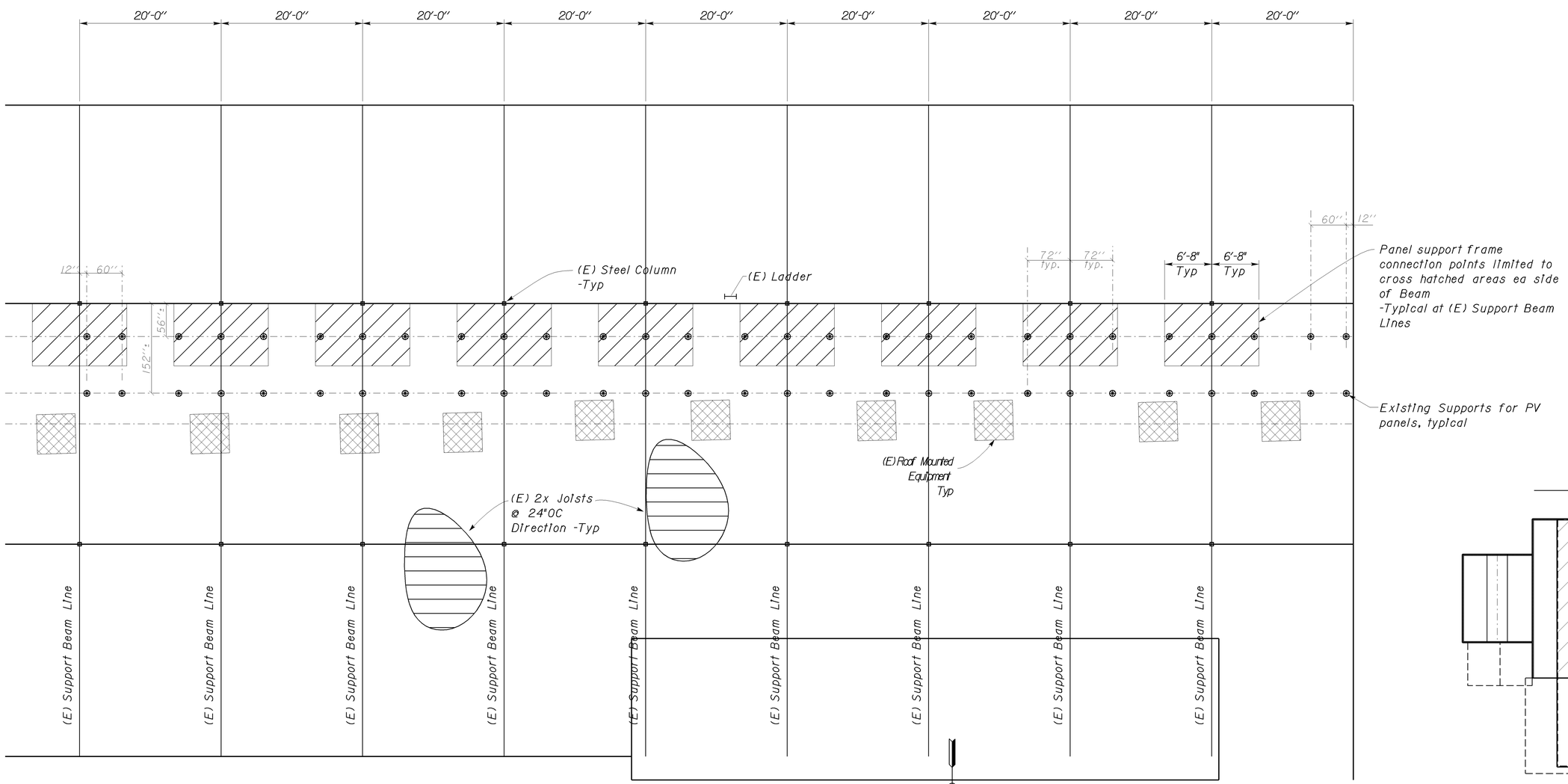
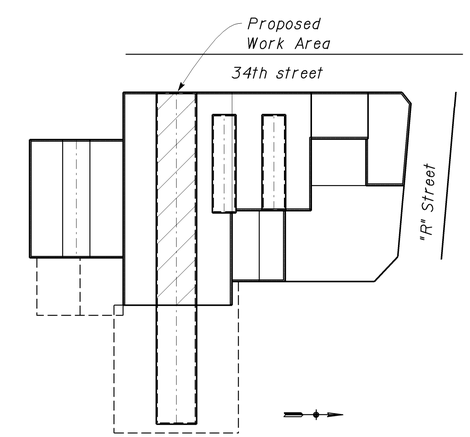
Reviewed by: FRANCIS SOLICH
Approval date: 09-15-11



NOTE: All dimensions shown with a ± have a variance of about 1½". This is due to the roof rafters being staggered.

1 STRUCTURAL ROOF PLAN
Scale 1/8" = 1'-0"



KEY PLAN

	BY	CHECKED
DESIGN	Brian Sutliff	Brian Sutliff
DETAILS	Brian Sutliff	Brian Sutliff
QUANTITIES	BY	CHECKED

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
ARCHITECTURAL AND STRUCTURAL DESIGN

BRIDGE NO. 24M5505
POST MILE

EQUIPMENT SHOP PHOTOVOLTAIC SYSTEM
SHOP AREA 2
STRUCTURAL ROOF PLAN 4

SHEET **ST-4**

DOES SD Imperial Rev. 9/02

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT 3595
PROJECT NUMBER & PHASE 0300020248S

DISREGARD PRINTS BEARING EARLIER REVISION DATES → 02-03-11

REVISION DATES (PRELIMINARY STAGE ONLY) SHEET OF

16-SEP-2011 08:41
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