PROJECT DESCRIPTION

This 7.15 kWtC, roof mounted photovoltaic (PV) system is to be installed at the single-family dwelling in Anytown, USA. The energy produced by the PV system shall be interconnected with the utility grid through the existing on-site electrical equipment via a back-fed breaker in the main service panel. This project includes storage batteries.

SCOPE OF WORK

(22) PV Modules (total: 405 sq. ft.)
(1) 7.6 kW battery inverter charger
(1) Battery, 9.6 kWh, NEMA 1
(22) SolarEdge power optimizers
(28) Attachment points @ 72" o.c. MAX.
(1) AC Disconnect, 240 Vac, NEMA 3R
(1) Auto-transformer, 240 Vac, NEMA 3R,
(1) Backup panel, 240 Vac, NEMA 1
(1) Electricity meter, 240 Vac, NEMA 3R

SITE SPECIFICATIONS

Occupancy Category: II
Design Wind Speed: 110 MPH (ASCE 7-10)
Ground Snow Load: 0 PSF (ASCE 7-10)
Exposure Category: C

GOVERNING CODES

2016 CA Electrical Code: § 110, 240, 250, 690, 705
2016 CA Building Code: § 1507.17, 1510.7, 3111
2016 CA Residential Code: § R324, R908
2017 CA Fire Code: § 605.11
Underwriters Laboratories (UL) Standards
CSIA 29 CFR 1910.269
CONTRACTOR NOTES:
1. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE SYSTEM DESIGN ENGINEER OF ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND DRAWINGS.
2. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL WORK AS SHOWN IN THE CONSTRUCTION CONTRACT DOCUMENTS UNLESS OTHERWISE NOTED. ALL WORK SHALL BE PERFORMED IN AN ORDERLY, WORKMAN-LIKE AND SAFE MANNER BY WORKERS SKILLED AND EXPERIENCED IN THEIR TRADES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL INSPECTIONS TO BE WITNESSED BY THE AHU AND OR THE OWNER. THE CONTRACTOR SHALL WORK WITH THE OWNER'S INSPECTION AGENCY TO PLAN THE INSPECTIONS, AND NOTIFY ALL PARTIES INVOLVED CONSIDERABLY IN ADVANCE TO ALLOW THE INSPECTIONS TO TAKE PLACE IN A TIMELY MANNER AND NOT DELAY THE PROGRESS OF THE WORK. THE OWNER AND SYSTEM DESIGN ENGINEER WILL NOT BE RESPONSIBLE FOR SCHEDULING, ARRANGING OR COORDINATING THE INSPECTIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE AREAS WHERE WORK IS TAKING PLACE, AS WELL AS ANY ADJOINING AREAS WHICH MAY BE AFFECTED BY THE WORK, TO PREVENT SUBJECTING THE OCCUPANTS, STRUCTURES, VEHICLES, EQUIPMENT, OR ANY OTHER PARTS OR CONTENTS OF THE SITE TO HAZARD OR DAMAGE.
5. THE CONTRACTOR SHALL FURNISH ALL NECESSARY BOXES, OUTLETS, SUPPORTS, CONDUITS, FITTINGS, AND ACCESSORIES TO FULLY COMPLY WITH ALL APPLICABLE CODES, REGULATIONS, BUILDING STANDARDS, AND THE BEST PRACTICE OF THE TRADE FOR THE INSTALLATION OF ELECTRICAL WORK.
6. THE CONTRACTOR SHALL, AT ALL TIMES DURING THE WORK, MAINTAIN ACCESSIBILITY FROM THE STREET TO ALL FIRE HYDRANTS, POWER OR LIGHT POLES, AND SIMILAR UTILITY AND PUBLIC SERVICE ITEMS ON OR ADJOINING TO THE CONSTRUCTION SITE.
7. WORK SHALL NOT RESTRICT CLEAR AND UNOBSTRUCTED ACCESS TO ANY WATER OR POWER DISTRIBUTION FACILITIES (POWER POLES, PULLBOXES, TRANSFORMERS, VAULTS, PUMPS, VALVES, METERS, APPARATUS, ETC., OR TO THE LOCATION OF THE HOOKUP.
9. UPON REVIEW OF ELECTRICAL DRAWINGS, THE ELECTRICAL CONTRACTOR SHALL INFORM THE SYSTEM DESIGN ENGINEER OF ANY DISCREPANCIES OR REQUEST CLARIFICATION, IF NEEDED, CONCERNING THE INTENT OF THE PLANS AND SPECIFICATIONS TO PROVIDE A COMPLETE ELECTRICAL INSTALLATION.
10. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS WHOSE WORK MIGHT AFFECT THIS INSTALLATION. CONTRACTORS SHALL ARRANGE ALL PARTS OF THIS WORK AND MAINTAIN IT IN PROPER RELATION TO THE WORK AND EQUIPMENT OF OTHERS AND WITH BUILDING CONSTRUCTION AND ARCHITECTURAL FINISH SO THAT IT WILL HARMONIZE IN SERVICE AND APPEARANCE.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE OWNER, INSPECTION AGENCY TO ARRANGE FOR INSPECTIONS RELATED TO ALL SPECIAL INSPECTIONS, AND INSPECTIONS OF THE SYSTEMS FOR WHICH THE SUBCONTRACTORS ARE RESPONSIBLE.

PHOTOVOLTAIC NOTES:
1. ALL ASPECTS OF WORK RELATED TO THE INSTALLATION OF PHOTOVOLTAIC (PV) SYSTEM SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL CODES AND REGULATIONS AND THE NEC, ESPECIALLY ARTICLE 690.
2. SOLAR PV MODULES, FRAMES, AND PROTECTIVE RACKING OR BARE COPPER G.F.E. FOR THE MODULE MANUFACTURER'S INSTRUCTION SHEET.
3. SOLAR PV MODULES SHALL BE BOUND IN ACCORDANCE WITH NEC 690.47.
4. CABLES BETWEEN MODULES, WIRE SIZES, QUANTITIES AND CONDUCT SIZES BETWEEN SOLAR ARRAYS AND CABLES TO BE DEFINED BY CONTRACTOR WITH SOLAR MODULE AND INVERTER MANUFACTURERS BEFORE INSTALLATION.
5. ALL SOURCE CIRCUIT CONDUCTORS AND CONNECTORS SHALL BE SUPPORTED AND SECURED WITHOUT EXCESSIVE STRESS. NO WIRING SHALL BE PERMITTED TO TOUCH THE ROOF SURFACE.
6. ALL SOURCE CIRCUIT CONDUCTORS EXPOSED BETWEEN ARRAYS SHALL BE SECURED ON BOTH SIDES, AND BE PROTECTED FROM PHYSICAL DAMAGE AND ABRAISON, INCLUDING FROM EDGES OF RACKING, CHANNEL EDGES, WIRE TRAYS, ETC.
7. ANY CABLE TIES USED SHALL BE HEAT STABILIZED (-40C TO 105C), UV STABILIZED OUTDOOR RATED, SUITABLE, AND DURABLE FOR THE ENVIRONMENT AND LIFE OF THE PV SYSTEM.
8. WHERE EXPOSED TO SUNLIGHT, CONDUCTORS SHALL BE LISTED AND MARKED AS SUNLIGHT RESISTANT.
9. ALL EQUIPMENT GROUND CONDUCTORS SMALLER THAN AWG #12 SHALL BE PROTECTED FROM PHYSICAL DAMAGE BY AN IDENTIFIED RACEWAY OR CABLE ARMOR UNLESS INSTALLED WITHIN THE HOLLOW SPACES OF THE FRAMING MEMBERS OF BUILDINGS OR STRUCTURES AND WHERE NOT SUBJECT TO PHYSICAL DAMAGE.

EQUIPMENT NOTES:
1. ALL MATERIALS, SUPPLIES, AND EQUIPMENT SHALL BE LISTED, USED, AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS, AND APPLICABLE NATIONALLY RECOGNIZED TESTING LABORATORY (UL) REQUIREMENTS.
2. ALL EQUIPMENT SHALL BE RATED FOR THE LOCATION IN WHICH IT IS INSTALLED.
3. WORKING SPACE AROUND ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
4. THE APPLIED LOCATION OF ALL JUNCTION BOXES, COMBINER BOXES, CONDUITS, ETC., SHALL BE DETERMINED FROM THE DRAWINGS, AND VERIFIED BY THE CONTRACTOR FOR INSTALLATION.
5. ALL JUNCTION BOXES, COMBINER BOXES, AND DISCONNECTS SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION.
6. PROVIDE MINT 3R RATED EQUIPMENT OR BETTER WHERE EXPOSED TO OUTDOORS.
7. WHERE SIZES OF RACEWAYS OR BOXES ARE NOT INDICATED ON THE DRAWINGS, THE CONTRACTOR SHALL SIZE THEM AS INDICATED ON THE INSTALLATION.
8. ALL VERTICAL RENDS OF CONDUIT OR TUBING TERMINATING IN THE BOTTOM OF WALL BOXES OR CABINETS OR SIMILAR LOCATIONS, SHALL BE PROTECTED FROM THE ENTRY OF FOREIGN MATERIAL PRIOR TO THE INSTALLATION OF CONDUCTORS.
9. METAL RACEWAYS, METAL ENCLOSURES OF ELECTRICAL DEVICES AND EQUIPMENT, CONDUIT, THROUGH, AND OTHER EQUIPMENT SHALL BE COMPLETELY GROUND AND GROUNDED IN ACCORDANCE WITH THE CODE AND NEC.
10. PROPER HARDWARE FOR A COMPLETE GROUNDING AND BONDING SYSTEM SHALL BE INSTALLED BY THE CONTRACTOR, IF NECESSARY.
11. GROUNDING RINGS SHALL HAVE A RESISTANCE TO GROUND OF 0.2 OHM OR LESS AND SHALL BE 5/8" X 8", COPPER-BONDED STEEL. ALL GROUND CONDUCTOR SHALL BE UL LISTED.
12. ALL PVC CONDUIT EXPOSED TO SUNLIGHT SHALL BE SCHEDULED PVC RATED AS SUNLIGHT RESISTANT. ALL UNDERGROUND PVC CONDUIT WILL BE MADE OF PVC Type 40 OR 90.

ELECTRICAL NOTES:
1. ELECTRICAL POWER IS TO BE SUPPLIED TO THE CONTRACTOR PERFORMING ANY WORK IN RACEWAYS WITH LIVE ELECTRICAL CIRCUITS OR ANY OTHER EQUIPMENT. WHEN SWITCHES OR CIRCUIT BREAKERS ARE OPEN OR IN SERVICE, ON ELECTRICAL WIRING OR CIRCUIT BREAKERS SHOULD BE INSTALLED OR INSTALLED IN A MANNER TO PREVENT SWITCHING OR BREAKING THAT WORK IS BEING PERFORMED ON THEM. INCLUDE THE DATE AND CONTRACTOR'S NAME ON THE SIGN OR TAG. IF DEVICE IS LOCKABLE, IT SHOULD BE PADLOCKED.
2. THE ELECTRICAL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE AHU, NATIONAL FIRE PROTECTION ASSOCIATION, AND LOCAL CODES AND STANDARDS.
3. PHASING OF NEW CONDUCTORS TO MATCH EXISTING CONDUCTORS, IF INSTALLING A NEW CIRCUIT, THEN CONTRACTOR SHALL FOLLOW THE PHASING SCHEMES PROVIDED IN THE ELECTRICAL DIAGRAM.
4. ALL CONDUCTORS SHALL BE COPPER, RATED FOR 90 DEGREE C, AND 600 VOLTS AC, UNLESS OTHERWISE NOTED.
5. GROUNDING ELECTRICAL CONDUCTOR (G.E.C.) SHALL BE CONTINUOUS AND/OR IRREVERSIBLY SPLICED/STIPPED.
6. FLEXIBLE, FINE-STRANDED CABLES SHALL BE TERMINATED ONLY WITH TERMINALS, LUGS, DEVICES, OR CONNECTORS THAT ARE IDENTIFIED AND LISTED FOR SUCH USE PER NEC 603.11T.
7. ALL WIRING SHALL BE IDENTIFIED BY CIRCUITS IN ALL CABLE BOXES, WIRING TROUGHS, AND OTHER ENCLOSURES, AND AT TERMINAL POINTS, I.E., RECEPTACLES, MECHANICAL LUGS, COMPRESSION FITTINGS. THE CIRCUIT DESIGNATIONS SHALL BE SHOWN ON THE CONTRACT DRAWINGS OR AS DIRECTED BY THE SYSTEM DESIGN ENGINEER. LABELS OR TAGS SHALL BE APPLIED TO WIRES SO THAT THEY WILL BE READILY VISIBLE.
8. FUSES OR SWITCHES SHALL BE CURRENT-LIMITING TYPE WITH A MINIMUM INTERRUPTING CAPACITY OF 200,000 AMPERES RMS (UNLESS OTHERWISE NOTED) AND OF THE CONTINUOUS CURRENT RATING AS INDICATED ON THE DRAWINGS OR AS RECOMMENDED BY THE MANUFACTURER.