

Illinois Tollway Base Sheet Revisions
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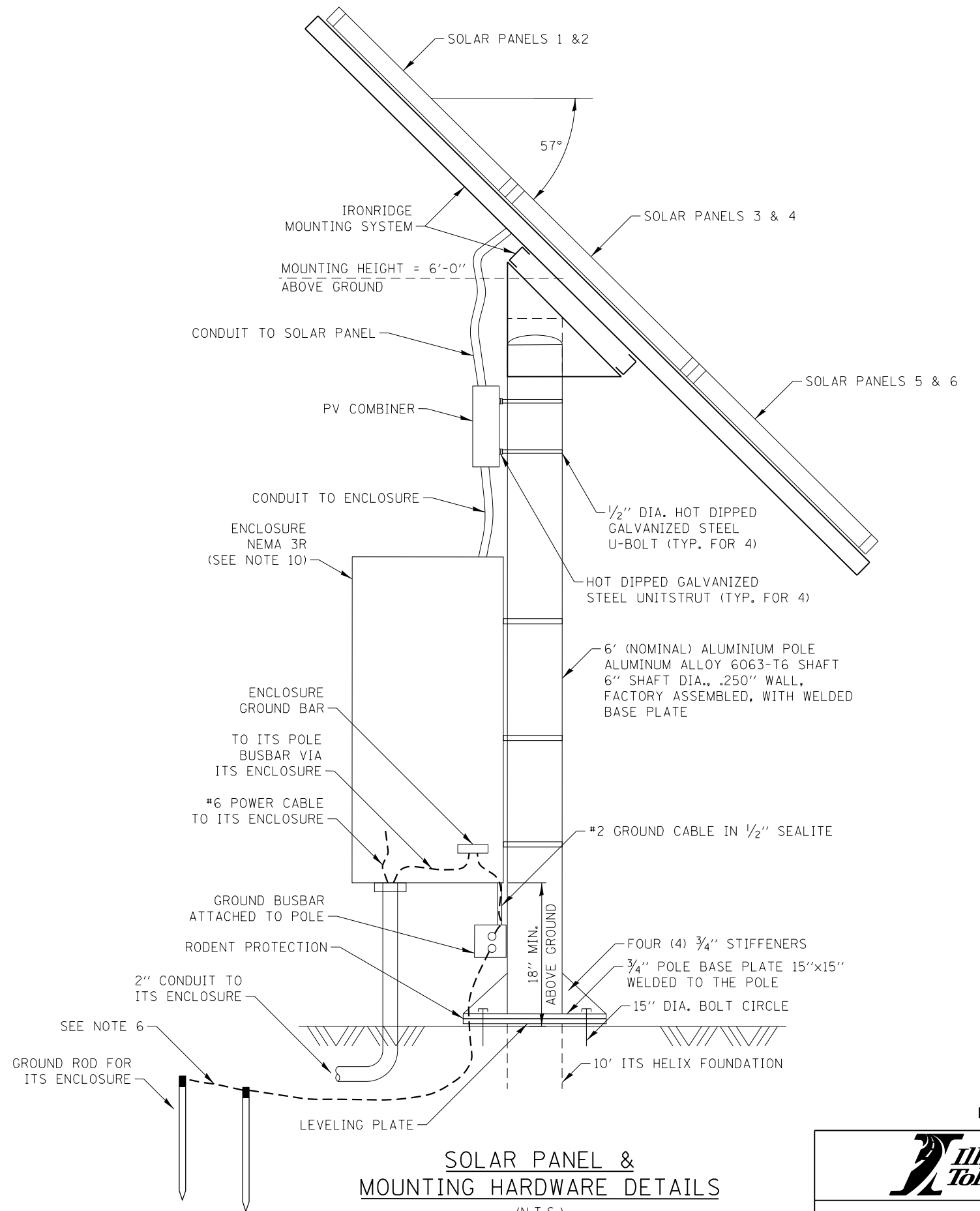
Section M	Base Sheet Drawings	
Drawing	Modification Summary	Effective: 2019-03-01
Pole Assembly (ITS)-Series 1000		
M-ITS-1000	Elevation Views Pole Mounted ITS Element Assembly Changed disconnect switch to unfused.	
M-ITS-1003	ITS Concrete Service Pad (2 sheets) New drawing with three types of service pads for ITS poles for flat and slope installation.	
M-ITS-1004	Cabinet Wiring Diagram - ITS Pole Mounted Enclosure (Solar Powered MVDS) (2 sheets) New cabinet layout separating ITS enclosure and dedicated co-located solar generator/battery cabinet with four 6 V batteries.	
Dynamic Message Sign (ITS)-Series 1100		
M-ITS-1108	DMS Cabinet Wiring Diagram Changed to Cisco 4000 series switch. Changed IP Relay to DIN IV.	
Cabinet Wiring (ITS)-Series 1200		
M-ITS-1200 to M-ITS-1217	Cabinet Wiring Diagrams 18 new ITS enclosure drawings replace old 56 ITS enclosure drawings for clarification. Drawings 1200 to 1217 have been redone completely. Consolidated equipment configurations. Standardized to-scale equipment layout. Changed to Cisco 4000 series switch. Eliminated 24 VAC transformer and 24 VAC CCTVs. Additional 24 VDC power supply. Cat6 Ethernet surge protectors revised to PoE++ compatible models.	
M-ITS-12018 to M-ITS-1255	Cabinet Wiring Diagrams Retired due to consolidation.	
Roadway Weather Information System (ITS)-Series 1300		
M-ITS-1300	RWIS Pole, Sensor Mounting Detail Pole height changed to 50 feet as standard pole for ITS with 17.5 inch bolt circle.	
M-ITS-1301	RWIS Cabinet Wiring Diagram Changed to Cisco 4000 series switch. Not connected to RWIS controller, for future use. Added IP Relay. Disconnected, for future use. Added secondary sensor pole cabinet wiring diagram. Cabinet is part of the design but was omitted in last year release.	
M-ITS-1303	Typical RWIS Grounding Schematic New drawing showing RWIS grounding system with grounding cable.	
Solar Powered Generator (ITS)-Series 1400		
M-ITS-1402	Pole Mounted Solar MVDS Assembly Co-located solar generator cabinet redesigned as M-ITS-1004.	
Tower Mounted CCTV (ITS)-Series 1500		
M-ITS-1500	Tower Mount Camera Details Cameras shown at offset height to avoid view obstruction. Pole mounting arm revised to Axis Q6155-E IP camera.	
M-ITS-1503	Cabinet Wiring Diagram - Tower Mounted CCTV Revised to show 24 VDC power supply, drawing drawn to scale.	
Flashing Beacon (ITS)-Series 1700		
M-ITS-1701	Flashing Sign Beacon Installation Wiring Diagram Revised to show full cabinet layout accomodating flasher beacon. Re-drawn to scale. Added flashing beacon, new surge suppressor.	
IPDC Facility (ITS)-Series 1800		
M-ITS-1802, 1803, 1805, 1806, 1809, 1810	IPDC Facility Building modified to accommodate larger generator room door, door stoppers. Additional exterior CCTV cameras. Added bird deterrant. Added exterior GFCI outlets.	
M-ITS-1802	Note 2: Seal door opening and protrusion/access against rodent and bugs. Note 3: Install removable stainless bollards per Illinois Tollway Maintenance.	
M-ITS-1803	Added 240 V service power outlet outside side wall.	
Conduit Details at Integral Abutment Bridge (ITS)-Series 1900		
M-ITS-1900	Conduit Details at Integral Abutment Bridge with MSE Wall (Sheet 3) Removed note stating concrete encasement to be placed monolithic with the approach slab. Added 0.5" PJF at the back of the abutment and approach bent. Added 0.75" PJF between the approach slab and encasement. Added detail for deflection and expansion fittings at the encasement and pile bent. Added detail for deflection fitting at encasement and abutment.	
100 FT. Monopole (ITS)-Series 2000		
M-ITS-2000 Sheet 4	100 FT. Monopole Closed Circuit Television (CCTV) Camera Tower Added sheet 4 of 4 showing hexagonal service pad.	

New Sheet

X Retired Sheet

NOTES:

1. SOLAR POWER GENERATOR TO INCLUDE PANEL, BRACKETS, CABINET, CHARGER REGULATOR, BATTERIES, AND CABLES. STRUCTURE TO BE DESIGNED TO MEET STRUCTURAL DESIGN CRITERIA IN SPECIFICATION.
2. THE BATTERIES SHALL BE WIRED TO PROVIDE 24V DC POWER TO AN INVERTER FOR 120V AC DELIVERY TO ITS ENCLOSURE.
3. CONTRACTOR SHALL LOCATE THE GROUND MOUNTED SOLAR PANEL SYSTEM LESS THAN 20' FROM THE POLE-MOUNTED ITS SYSTEM AND ENSURE THAT THE SOLAR PANELS HAVE UNOBSTRUCTED SUN EXPOSURE.
4. GROUND MOUNTED SOLAR PANEL POLES INSTALLED WITHIN THE CLEAR ZONE SHALL BE SHIELDED BY BARRIER, LOCATED A MINIMUM OF 5' BEHIND THE PLANE OF ANY GUARDRAIL POSTS. SEE ILLINOIS TOLLWAY GUARDRAIL STANDARD (SECTION C OF STANDARDS) FOR MORE INFORMATION. ALL OTHER POLES SHALL BE LOCATED OUTSIDE THE CLEAR ZONE OR AS DIRECTED BY THE ENGINEER. FINAL LOCATION TO BE APPROVED BY THE ENGINEER.
5. ALL EQUIPMENT MUST BE CONNECTED TO A COMMON GROUND THROUGH THE ADJACENT ITS POLE BUSBAR. CONNECT A #2 AWG GROUND CABLE FROM THE EXTERNAL SOLAR POLE MOUNTED GROUND BUSBAR TO THE GROUND BAR IN THE SOLAR ENCLOSURE. ANY GROUND CONNECTED TO THE EXTERNAL GROUND BUSBAR SHALL BE EXOTHERMIC WELDED TO THE BUSBAR. SEALTITE CONDUIT SHOULD BE GROMMETTED ON END GOING TO BUSBAR TO PREVENT RODENTS AND INSECTS FROM ENTERING. A #2 AWG GROUND CABLE SHALL BE ATTACHED TO THE GROUND BUSBAR ATTACHED TO THE ADJACENT ITS POLE AND ROUTED THROUGH THE CONDUIT CONNECTING THE TWO ENCLOSURES AND ATTACHED TO THE GROUND BUSBAR ATTACHED TO THE SOLAR POLE. THE GROUND BUSBAR SHALL CONNECT TO A GROUND ROD (IN AN INSPECTION WELL) FOR THE SOLAR GENERATOR.
6. THE SOLAR POWER GENERATOR GROUND ROD SHALL BE CONNECTED TO THE GROUND ROD FOR THE ITS ENCLOSURE VIA A #2 AWG BARE GROUND CABLE EXOTHERMIC WELDED TO BOTH GROUND RODS.
7. CONTRACTOR TO PROVIDE ALL POWER AND GROUND WIRING REQUIRED FOR SYSTEM OPERATION WITHIN AND OUTSIDE THE ENCLOSURE.
8. BACKFILL HELIX FOUNDATION TO THE TOP OF THE POLE BASE ON ALL SIDES.
9. ALL CABLING (INCLUDING CABLING INSIDE THE ENCLOSURE) SHALL BE OUTDOOR RATED. THE GROUND WIRE (WHITE) IN THE POWER CABLE SHALL BE TAPED GREEN.
10. ENCLOSURE SHALL BE VENTED AND CONTAIN BATTERIES AND SOLAR CONTROLLER.
11. SOLAR PANELS SHALL FACE 186 DEGREES FROM MAGNETIC NORTH AND SHALL BE TILTED 57 DEGREES FROM THE HORIZON.



NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE DRAWING INTO THE PLAN SET.

SOLAR PANEL & MOUNTING HARDWARE DETAILS

(N.T.S.)

M-ITS-1400



SOLAR POWER GENERATOR DETAILS

DATE
3-31-2017

NEMA 4X ELECTRICAL BOX
(SHALL CONTAIN SOLAR CONTROLLER, INVERTER, BATTERIES AND ELECTRONICS)

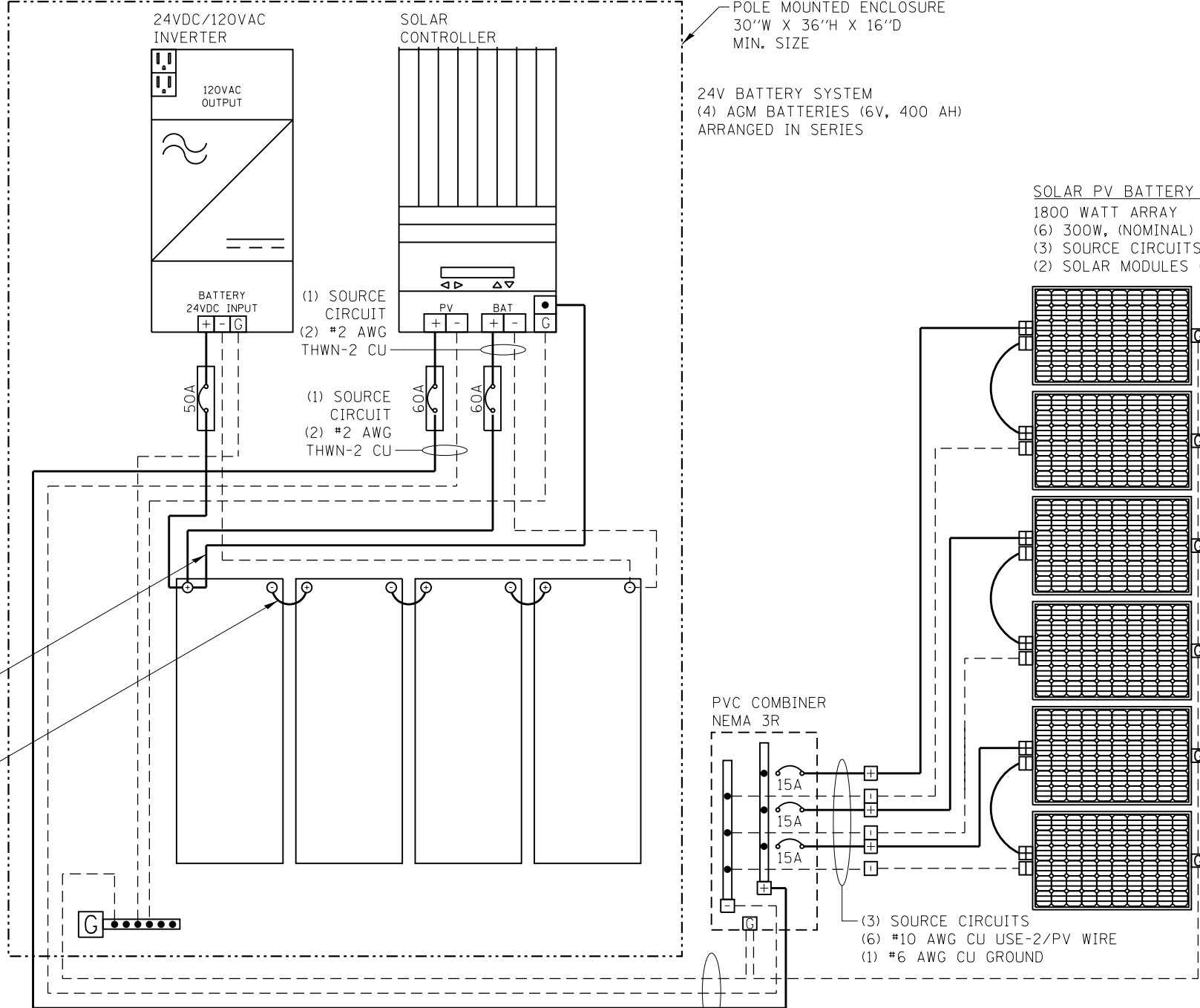
POLE MOUNTED ENCLOSURE
30"W X 36"H X 16"D
MIN. SIZE

24V BATTERY SYSTEM
(4) AGM BATTERIES (6V, 400 AH)
ARRANGED IN SERIES

SOLAR PV BATTERY SYSTEM
1800 WATT ARRAY
(6) 300W, (NOMINAL) SOLAR PANELS
(3) SOURCE CIRCUITS (IN PARALLEL)
(2) SOLAR MODULES (IN SERIES)

TEMPERATURE
SENSOR CABLE

BATTERY TO BATTERY CONDUCTORS
2/0 AWG THWN-2 CU
(SHALL BE EQUAL LENGTH TO
EQUALIZE BATTERY SYSTEM)



PVC COMBINER
NEMA 3R

(3) SOURCE CIRCUITS
(6) #10 AWG CU USE-2/PV WIRE
(1) #6 AWG CU GROUND

(1) SOURCE CIRCUIT
(2) #6 AWG THWN-2 CU
(1) #10 AWG THWN-2 CU GND
3/4" EMT CONDUIT

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M-ITS-1401



SOLAR POWER
GENERATOR CABINET
1-LINE ELECTRICAL DIAGRAM

DATE
3-1-2019