

**Illinois Tollway Base Sheet Revisions**

<b>Section M</b>		<b>Base Sheet Drawings</b>	
<b>Drawing</b>	<b>Modification Summary</b>	<b>Effective: 2020-03-01</b>	
<b>Pole Assembly (ITS)-Series 1000</b>			
<b>M-ITS-1000</b>	<b>Elevation Views Pole Mounted ITS Element Assembly</b>		
	Use 1 1/2" stainless conduits for power and fiber to ITS Enclosure instead of 2". Corrected the MVDS mounting height on elevation details Use 1 1/2" stainless conduit for ITS Disconnect switch		
<b>M-ITS-1001</b>	<b>General Notes Pole Mounted ITS Assembly</b>		
	Note added on placement of battery enclosure		
<b>M-ITS-1002</b>	<b>ITS Standard Foundation</b>		
	Note added to use 12 ft helix foundation for slopes over 1:6		
<b>M-ITS-1003</b>	<b>ITS Concrete Service Pad</b>		
	Shows option for back-to-back mounted ITS enclosures.		
<b>M-ITS-1004</b>	<b>Cabinet Wiring Diagram - ITS Pole Mounted Enclosure (Solar Powered MVDS) (2 sheets)</b>		
	Sheet 1: Revised layout to better accommodate future expansion.		
<b>Dynamic Message Sign (ITS)-Series 1100</b>			
<b>M-ITS-1100 to M-ITS-1108</b>	<b>DMS</b>		
	(Typical) Revised Type 1 nomenclature to Walk-in (Typical) Revised Type 2 nomenclature to Front Access		
<b>M-ITS-1101</b>	<b>DMS Type 1 Site Grounding Plan</b>		
	Revised to show paved median structure		
<b>M-ITS-1108</b>	<b>DMS Cabinet Wiring Diagram</b>		
	Clarified wiring diagram Updated switch model		
<b>Cabinet Wiring (ITS)-Series 1200</b>			
<b>M-ITS-1200 to M-ITS-1217</b>	<b>Cabinet Wiring Diagrams</b>		
	New Cat6 surge suppressor Axis T8061 for Axis PoE camera and Ditek for Cohu PoE camera Revised layout for Cisco 4000 switch, power supply, Cohu PoE injectors Revised 1214-1216 plan to remove Cisco switch Added Level 3 Cisco license (L-IE4000-RTU=) Modified gator patch model number		
<b>Roadway Weather Information System (ITS)-Series 1300</b>			
<b>M-ITS-1300</b>	<b>RWIS Pole, Sensor Mounting Detail</b>		
	General note to have manufacturer to supervise installation and commissioning Revised to show option for co-located CCTV camera and ITS enclosure Clarified the mounting height measured from pavement surface Installed new ITS Enclosure back to back to the RPU enclosure Add ITS Disconnect switch within 50 feet from primary pole Show RWIS cabinet configuration for the 3 electrical services		
<b>M-ITS-1301</b>	<b>RWIS Cabinet Wiring Diagram</b>		
	Removed Cisco switch and gator patch from RPU enclosure		
<b>M-ITS-1302</b>	<b>Typical RWIS Site Installation Plan</b>		
	Proposed location of temperature sensors are site specific, final position to be determined by the Engineer in consultation with manufacturer. Correct sensor beam position to be in the wheel track for primary and secondary pole. Power cable from primary pole to secondary pole not to be spliced		
<b>M-ITS-1303</b>	<b>RWIS Grounding Schematic</b>		
	Corrections and additional detail to grounding diagram		

 New Sheet

 Retired Standard

**Illinois Tollway Base Sheet Revisions**

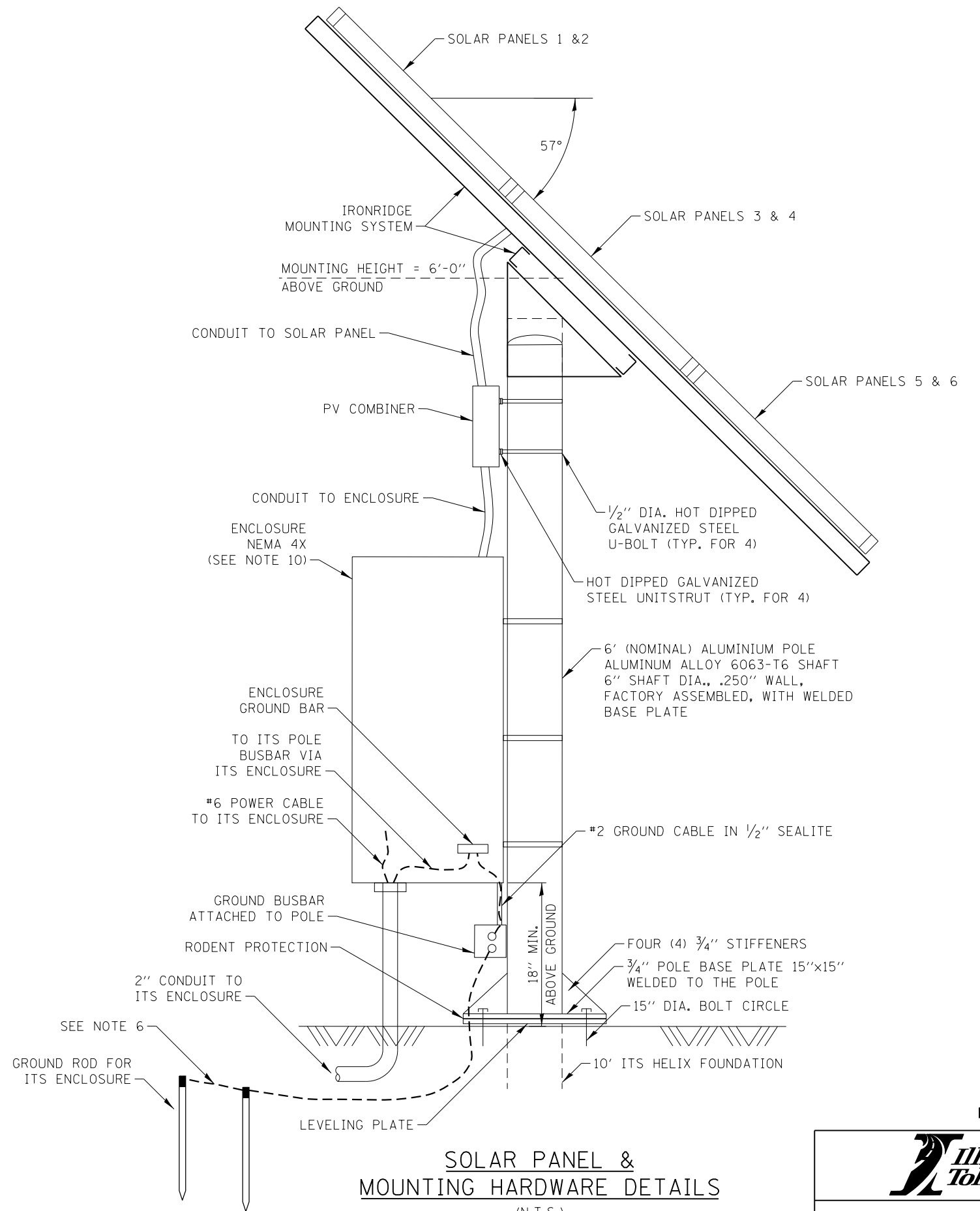
<b>Section M</b>		<b>Base Sheet Drawings</b>	
<b>Drawing</b>	<b>Modification Summary</b>	<b>Effective: 2020-03-01</b>	
<b>Solar Powered Generator (ITS)-Series 1400</b>			
<b>M-ITS-1400</b>	<b>Solar Power Generator Details</b>		
	Enclosure changed to Nema 4X		
<b>Tower Mounted CCTV (ITS)-Series 1500</b>			
<b>M-ITS-1500</b>	<b>ITS Details Tower Mount Camera Details</b>		
	Vertical distance between the two cameras is 24 in min. Both cameras to be installed on same side of the tower structure		
<del>M-ITS-1501</del>	<del>ITS Details Tower Mount Camera Details, 300' Cat6 or More</del>		
	Retired		
<b>M-ITS-1502</b>	<b>ITS Details Tower Mount Camera Details, 300' Cat6 or Less</b>		
	Vertical distance between the two cameras is 24 in min. Both cameras to be installed on same side of the tower structure		
<b>M-ITS-1503</b>	<b>Cabinet Wiring Diagram Tower Mounted CCTV ITS Assembly</b>		
	New Cat6 surge suppressor model		
	Revised layout of Cisco switch, power supply and Cohu PoE injector		
<b>Weigh-in-Motion (ITS)-Series 1600</b>			
<b>M-ITS-1600</b>	<b>Weigh-In-Motion Cabinet and Foundation Details</b>		
	Show two permanent antennas installed on top of WIM cabinet		
<b>M-ITS-1603</b>	<b>Weigh-In-Motion Detector Loop and Quartz Sensor Detail</b>		
	Show parking area for one vehicle for annual calibration		
<b>M-ITS-1607</b>	<b>Weigh-In-Motion Height Detector</b>		
	Added detail for overheight detector		
<b>Flashing Sign Beacon (ITS)-Series 1700</b>			
<b>M-ITS-1701</b>	<b>Cabinet Layout and Wiring ITS Pole Mounted Enclosure (1-CCTV and Flashing Sign Beacon)</b>		
	Update enclosure layout		
<b>IPDC Facility (ITS)-Series 1800</b>			
<b>M-ITS-1800</b>	<b>IPDC Facility</b>		
	No change		
<b>Conduit Details at Integral Abutment Bridge (ITS)-Series 1900</b>			
<b>M-ITS-1900</b>	<b>Conduit Details at Integral Abutment Bridge with MSE Wall (Sheet 3)</b>		
	No change		
<b>100 FT. Monopole (ITS)-Series 2000</b>			
<b>M-ITS-2000</b>	<b>100 FT. Monopole Closed Circuit Television (CCTV) Camera Tower</b>		
	Pole cap to use hex head screws		
	Show revised grounding around service pad		

 New Sheet

 Retired Standard

**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  
3-1-2020

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

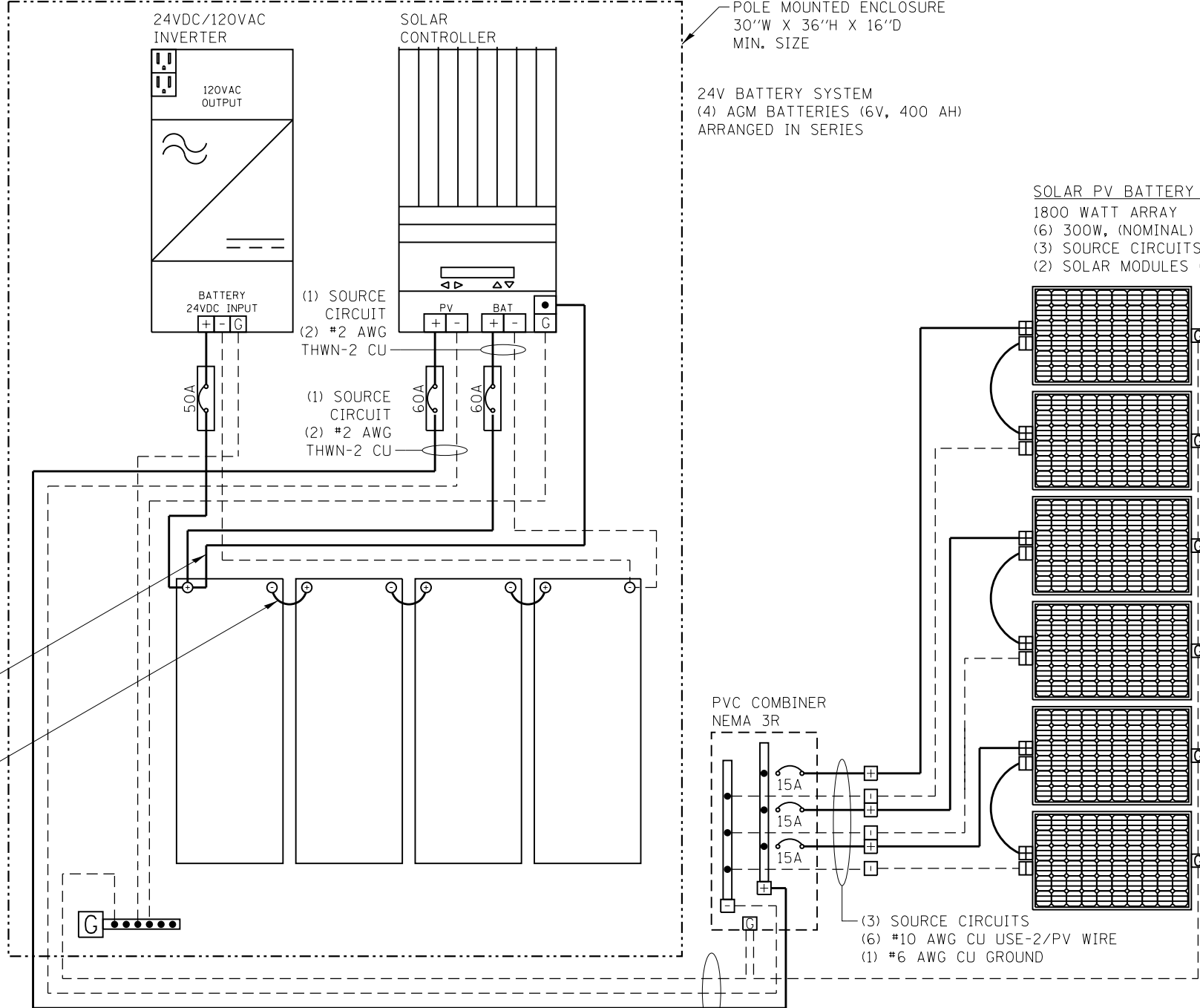
POLE MOUNTED ENCLOSURE  
30"W X 36"H X 16"D  
MIN. SIZE

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