

LEGEND

- CURRENT TRANSFORMER  
POTENTIAL TRANSFORMER  
FUSE  
DRAW OUT MEDIUM VOLTAGE CIRCUIT BREAKER  
POWER METER  
DISCONNECT SWITCH  
TRANSFORMER  
BREAKER  
SURGE ARRESTER  
INVERTER  
FIBER OPTIC  
POWER  
DATA/CONTROL  
TEST SWITCH  
VOLTAGE SENSOR

13.8KV DISTRIBUTION CIRCUIT  
NAT.GRID

POI-UTILITY TAP

MCOV  
GP SWITCH  
15KV,

7969V/120V

TO UTILITY OPERATOR  
MPLS.  
RTU  
GE IBOX  
or EQUIV.

7969V/120V

UTILITY METER

9 GANGED OPERATED LOAD DISCONNECT SWITCH  
8.4KV MCOV

1KVA, 7969V:120V  
63:55:1 RATIO, 3% ACCURACY

LEA-5V-10000:1 RATIO  
½% ACCURACY

500/1

7 RECLOSER  
15KV, 1100A, 110 KV BIL

PROTECTIVE DEVICE FUNCTIONS:  
27 - UNDERVOLTAGE RELAY  
51 - OVER CURRENT  
51G - NEUTRAL VOLTAGE RELAY  
51C - VOLTAGE CONTROLLED OVERCURRENT  
51GC - VOLTAGE CONSTRAINED GROUND TIME OVERCURRENT  
50/51P - PHASE INSTANTANEOUS/TIME OVER CURRENT  
59 - OVERVOLTAGE RELAY  
81U - UNDERFREQUENCY RELAY  
81O - OVERFREQUENCY RELAY  
59N - NEUTRAL OVERVOLTAGE RELAY

TO OWNER NETWORK

PLANT  
CONTROLLER

TO INVERTER COMM

TO MET STATION

TYPICAL INVERTER STATION

2000kW INVERTER  
INV.OX

2600A

565V

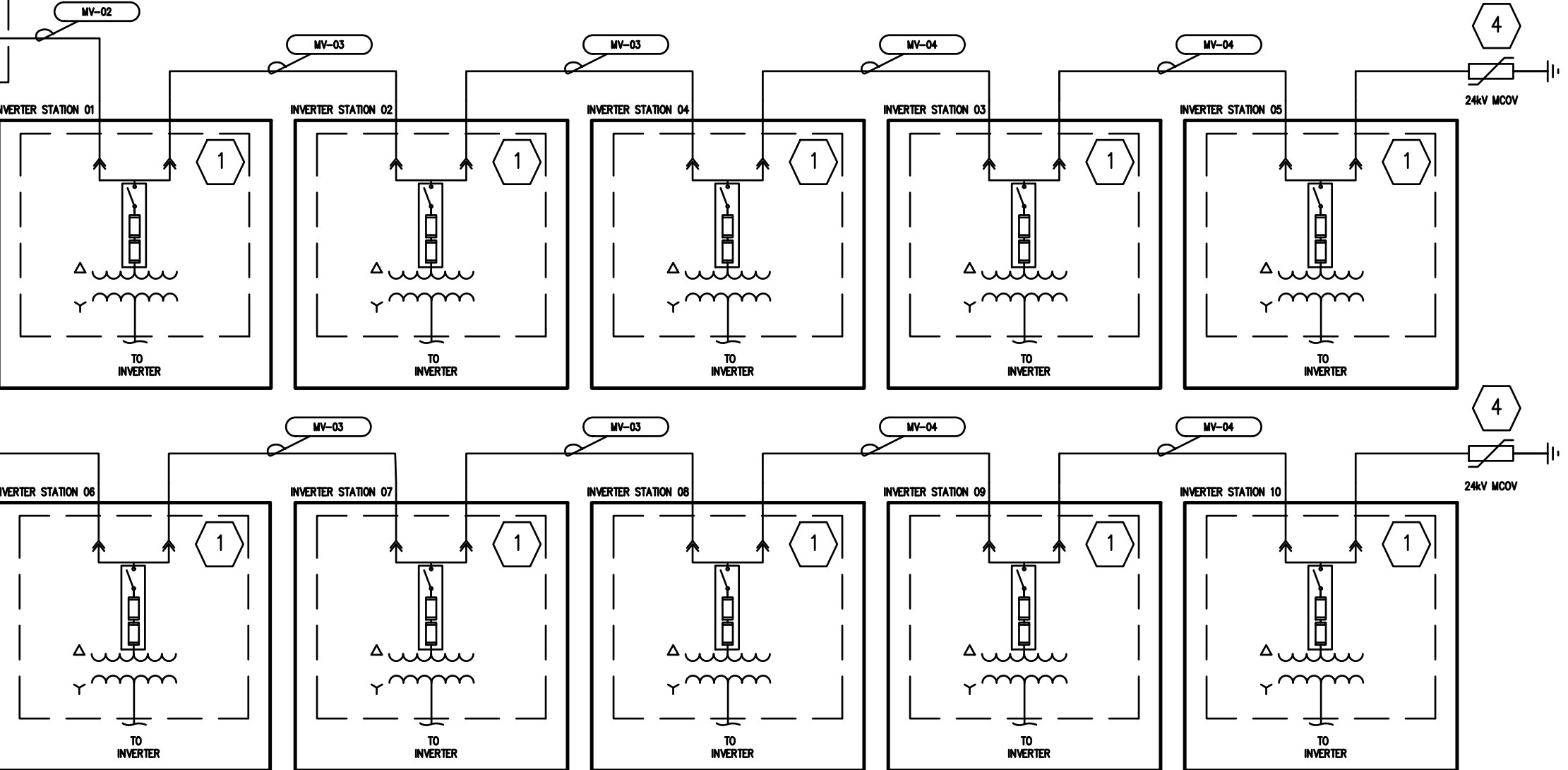
115V

20A/2P

SCADA  
PANEL

DC  
DISCONNECT

CMB.01/24  
CMB.02/24  
CMB.03/24  
CMB.04/24  
CMB.05/24  
CMB.06/24  
CMB.07/24  
CMB.08/24  
CMB.09/24  
CMB.10/24



PROJECT SUMMARY

AC Capacity:	20MW-AC
DC Capacity:	27MW-DC
System DC/AC Ratio:	1.35
DC/AC Ratio at POI:	NA
Module:	LG400N2W
Module Wattage:	400W
Module Quantity:	67,600
Inverter:	POWER ELECTRONICS HEC-US FS2100CU15
Inverter AC Nominal:	2000kW (at 25°C)
Inverter Quantity:	10

NOTES

- INVERTER CERTIFIED TO UL 1741(IEEE 1547).
- PV MODULES CERTIFIED TO UL 1703.
- 48" BEND RADIUS MINIMUM FOR ALL MV CONDUIT BENDS.
- TRANSFORMER PRIMARY PROVIDED WITH 600A NON-LOAD (N-L) BREAK TERMINATIONS. CONTRACTOR TO PROVIDE LOAD-BREAK (L) REDUCING TAP BUSHINGS FOR LOAD-BREAK ELBOW CONNECTIONS IF NEEDED.
- PROVIDE EXTERNAL SURGE ARRESTERS AT TRANSFORMERS, ELBOW CONNECTED ON THE HIGH VOLTAGE SIDE OF TRANSFORMER. WHERE SHOWN.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE NEC, NESC, AND ALL APPLICABLE REQUIREMENTS OF THE LOCAL UTILITY COMPANY AND LOCAL AUTHORITY HAVING JURISDICTION.
- VERIFY PHASE ROTATION WITH SUBSTATION DESIGNER BEFORE INTERCONNECTION.
- RELAYS SHALL HAVE ABB FT-1 OR EQUIVALENT TEST SWITCHES.

KEY NOTES

- 2MVA INVERTER/TRANSFORMER SKID. 2MVA KNAN TRANSFORMER, 5.75%, 95kV BIL, 1.08%, 5.65%, 5.19 X/R, 2-2.5% ± TAPS
- 2000kW POWER ELECTRONICS INVERTER MODEL FS2100CU15 SHORT CIRCUIT CURRENT=4650A. MAX OP CURRENT=2570A
- INVERTER INTEGRAL DC DISCONNECT. TYPICAL MODULE SOURCE STRING OF 26 MODULES IN SERIES, 24 STRINGS PER COMBINER BOX
- 24KV MVOC SURGE ARRESTER
- SWITCH GEAR POWER SYSTEMS, 15KV LOAD INTERRUPTER SWITCHGEAR, 1200A, 3PH, 4 WIRE, NEMA 3
- POWER ELECTRONICS PLANT CONTROLLER (FSMTU003AI PCC BOX)
- 15KV RECLOSER, 1100A, 25KA
- 10KVA TRANSFORMER
- GANGED OPERATED LOAD DISCONNECT SWITCH, 1200A, VISIBLE BLADE, UTILITY LOCKABLE AND ACCESSIBLE 24/7
- RELAY FAILURE ALARM  
RELAY FAILURE OR LOSS OF DC SUPPLY VOLTAGE WILL TRIP RECLOSER WITHIN A MAX OF 2 SECONDS

WIRE NAME	WIRE TYPE	WIRE SIZE
MV-01	AWG AL 345 MILS TRXPLE	(2) 750
MV-02	AWG AL 345 MILS TRXPLE	750
MV-03	AWG AL 345 MILS TRXPLE	500
MV-04	AWG AL 345 MILS TRXPLE	250

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Designed: MFM

Checked: DAM

Drawn: TCR/JFS

Record Drawing by/date:

REV#	DATE	DESCRIPTION
A	07/26/2017	IA ONELINE ISSUE

Prepared for:



222 S 9th Street, Suite 1600  
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ASHBURNHAM, MA

MVAC Oneline

ISSUED FOR IA ONELINE

Date: 07/26/2017

Drawing No. 1 of 1