

PHOTOVOLTAIC SYSTEM FOR NEXTGRID PARTNERS - NORFOLK

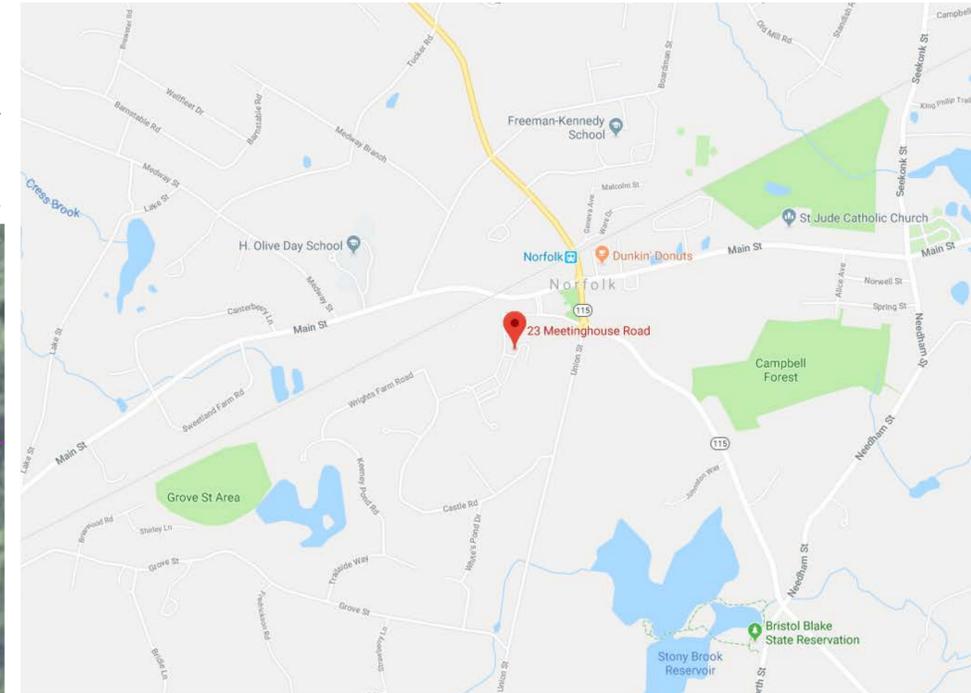
41 MEETING HOUSE ROAD, NORFOLK MA 02056



HARVARD, MA 01451-0242 tel: 978-455-5555
www.solar-design.com fax: 978-772-9715



1 249.66 kWdc (195.00 kWac) PV ARRAY WITH 684QTY 365W MDOULEST AT 25° TILT



2 LOCUS MAP



3 SIMILAR ARRAY

MODULES	DC POWER	AC POWER	ANNUAL AC ENERGY
684/ 365W	249.66 kWdc	195.00 kWac	330,443 kWhr/yr

ESTIMATED ANNUAL ENERGY PRODUCTION BASED ON:
PVWATTS CALCULATOR
LAT, LON 42.13, -71.34 WEATHER DATA
PREMIUM MODULE
16% SYSTEM LOSSES
FIXED TILT (GROUND MOUNT)
98.5% INV EFFICIENCY
1.28 DC/AC RATIO

APPLICABLE STANDARDS
- 2017 NATIONAL ELECTRIC CODE
- MASSACHUSETTS AMENDMENTS TO 2017 NEC
- 9TH EDITION MASSACHUSETTS BUILDING CODE
- 2017 NATIONAL ELECTRICAL SAFETY CODE
- EVERSOURCE CONSTRUCTION STANDARDS
- NORFOLK, MA BUILDING & ELECTRICAL INSPECTORS (AHI)s
- INSTALLING CONTRACTOR AND ALL PERSONNEL ON SITE SHALL FOLLOW APPROPRIATE LOTO PROCEDURES BEFORE SERVICING EQUIPMENT AND SHALL BE EQUIPPED WITH THE APPROPRIATE PPE.

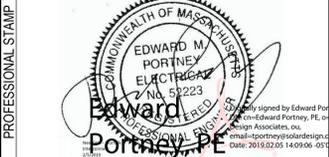
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NEXTGRID PARTNERS - NORFOLK

INTERCONNECTION APPLICATION

Friday, February 01, 2019



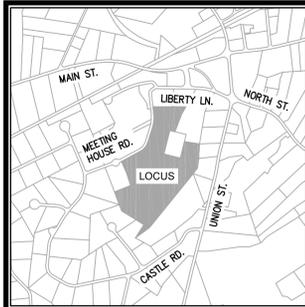
MARK	DATE	DESCRIPTION

CONTRACTOR	NAME

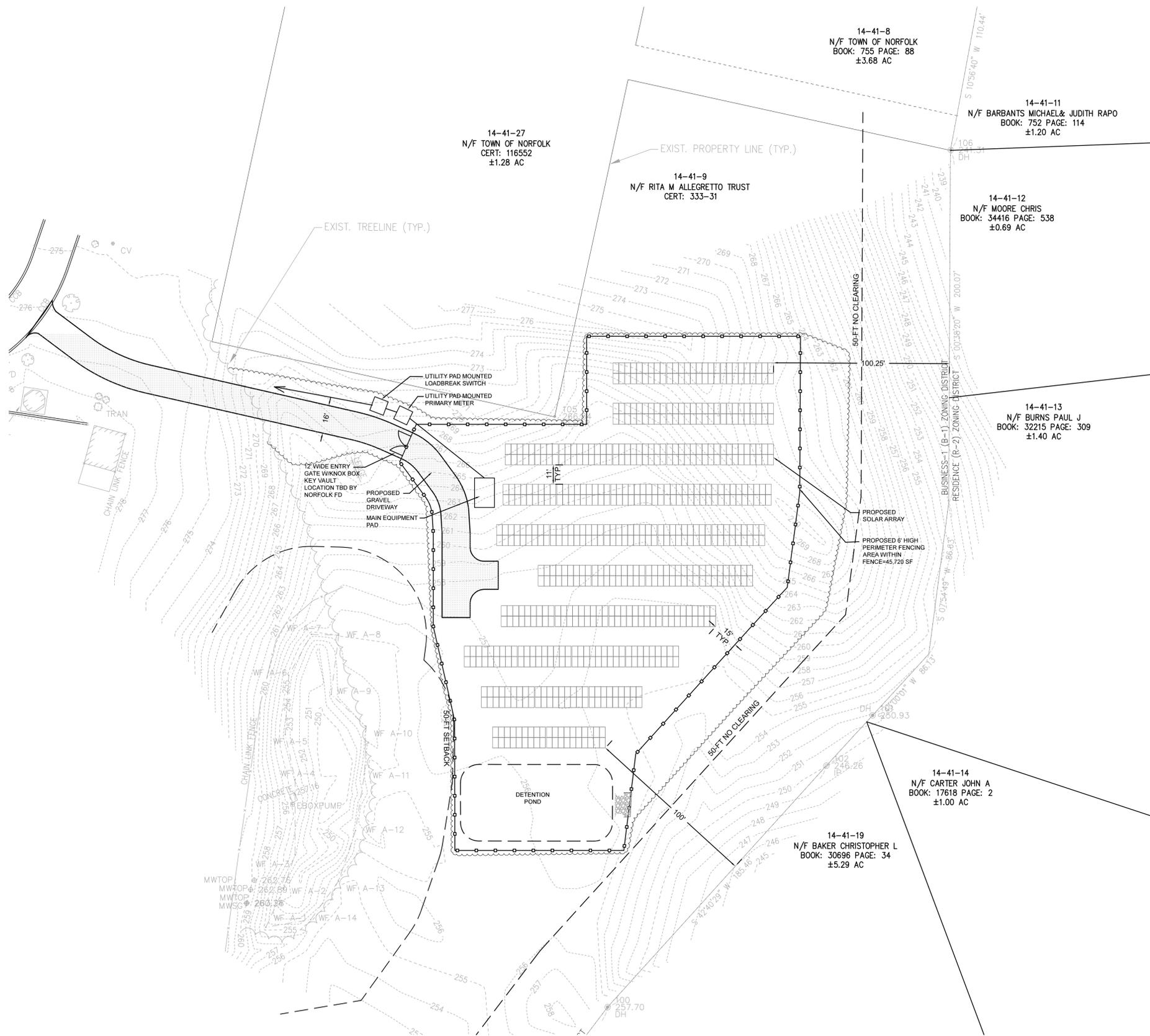
SITE	NAME

FILE NAME	2019-0128 NextGrid Partners - Norfolk.pln
SCALE	AS NOTED
DRAWN BY	NL DATE DRAFTED: 2/11/2019
CHECKED BY	TP SHEET SIZE: ARCH D

DRAWING NO.	PV001
DRAWING TITLE	PV SITE PLAN



LOCUS MAP



ZONING

ZONING DISTRICT: B-1
 ZONING SUBDISTRICT: BUSINESS CORE

ZONING TABLE	REQUIRED	PROVIDED
LOT AREA	30,000 S.F.	209,506 S.F.
FRONTAGE	75.0'	302.91'
LOT BLDG. COVERAGE	80% MAX.	N/A
MAX. BLDG. HEIGHT	40.0'	N/A
SETBACKS		
FRONT	0.0'	>0'
SIDE	0.0'	100'
REAR	5.0'	>5'

- NOTE:**
1. APPLICATION IN ACCORDANCE WITH MGL CHAPTER 40 A SECTION 3-SOLAR ACCESS.
 2. CONTRACTOR SHALL NOTIFY DIG-SAFE A MINIMUM OF 48-HOURS PRIOR TO MOBILIZATION.
 3. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CLEARING AND EARTHWORK OPERATIONS.

14-41-8
 N/F TOWN OF NORFOLK
 BOOK: 755 PAGE: 88
 ±3.68 AC

14-41-11
 N/F BARBANTS MICHAEL & JUDITH RAPO
 BOOK: 752 PAGE: 114
 ±1.20 AC

14-41-12
 N/F MOORE CHRIS
 BOOK: 34416 PAGE: 538
 ±0.69 AC

14-41-13
 N/F BURNS PAUL J
 BOOK: 32215 PAGE: 309
 ±1.40 AC

14-41-14
 N/F CARTER JOHN A
 BOOK: 17618 PAGE: 2
 ±1.00 AC

14-41-19
 N/F BAKER CHRISTOPHER L
 BOOK: 30696 PAGE: 34
 ±5.29 AC

14-41-27
 N/F TOWN OF NORFOLK
 CERT: 116552
 ±1.28 AC

14-41-9
 N/F RITA M ALLEGRETTO TRUST
 CERT: 333-31



66 SANDRA WAY
 PLYMOUTH, MA 02360
 P: 774.269.1861

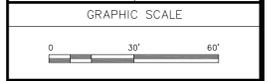
PROJECT
LARGE SCALE GROUND MOUNTED SOLAR ARRAY
 41 MEETINGHOUSE ROAD
 NORFOLK, MASSACHUSETTS

OWNER
 NEXTGRID INC.
 PO BOX 7775 #73069
 SAN FRANCISCO, CA 94120

REVISIONS

NO.	DATE	DESCRIPTION

CADD FILE	
DESIGNED BY	NAC
DRAWN BY	NAC
CHECKED BY	NAC
DATE	9-23-19
DRAWING SCALE	1"=30'-0"



SHEET TITLE
PROPOSED SITE PLAN

PERMIT SET

DRAWING NO.
C-1
 PROJECT NO. 2019-010

REVISIONS		
NO.	DATE	DESCRIPTION

CADD FILE	
DESIGNED BY	NAC
DRAWN BY	NAC
CHECKED BY	NAC
DATE	9-23-19
DRAWING SCALE	N.T.S.
GRAPHIC SCALE	

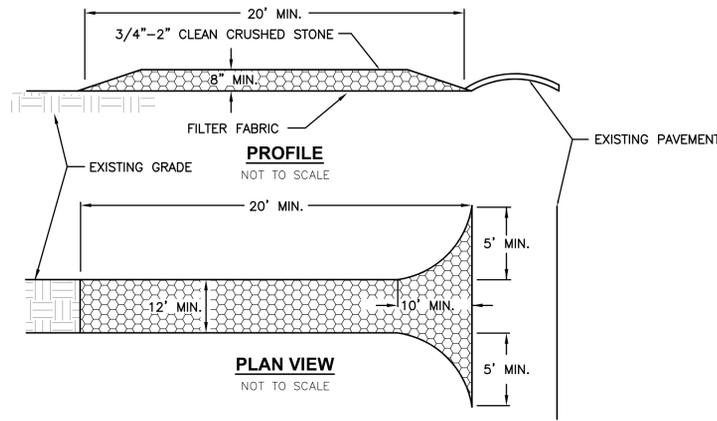
SHEET TITLE
**SITE
DETAIL
PLAN
1 OF 2**

DRAWING NO.

C-3

PROJECT NO. 2019-010

PERMIT SET

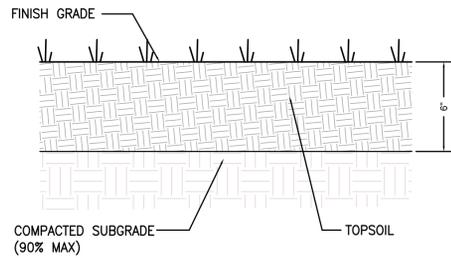


NOTES:

1. STONE SIZE - USE 3/4"-2" CLEAN WASHED STONE.
2. LENGTH - NOT LESS THAN 40 FEET.
3. THICKNESS - NOT LESS THAN (8) INCHES.
4. WIDTH - TWELVE (12) MINIMUM. BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED. IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

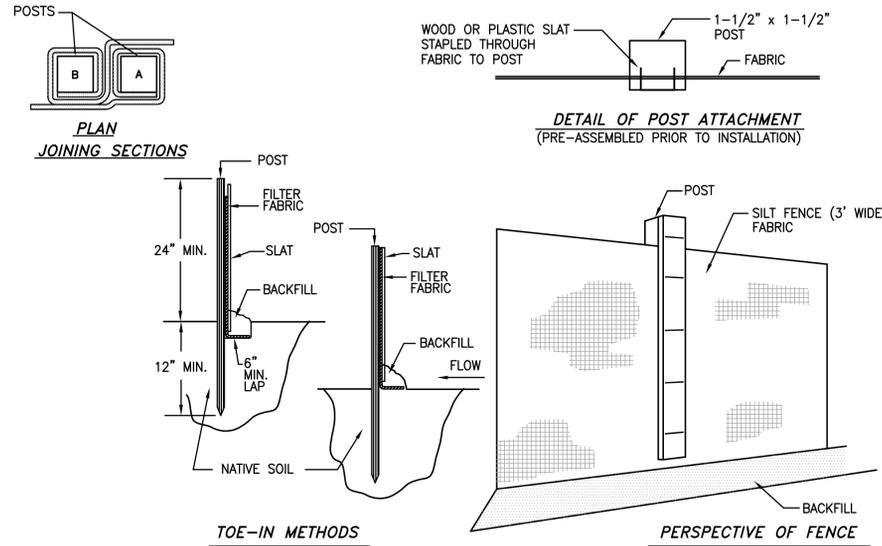
STABILIZED CONSTRUCTION ENTRANCE

N.T.S.



LOAM AND SEED DETAIL (DISTURBED AREAS)

N.T.S.

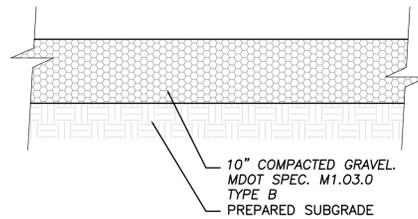


NOTES:

1. EXCAVATE A 6"x6" TRENCH ALONG THE LINE OF EROSION CONTROL OF THE SITE.
2. UNROLL SILTATION FENCE AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH (NET SIDE AWAY FROM FLOW DIRECTION).
3. DRIVE THE POST INTO THE GROUND UNTIL THE NETTING IS LAYING ACROSS THE TRENCH BOTTOM. LAY THE TOE-IN FLAP OF THE FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING FABRIC FLAP ON UNDISTURBED GROUND AND PILING & TAMP-ING FILL AT THE BASE.

SILTATION FENCE DETAIL

N.T.S.

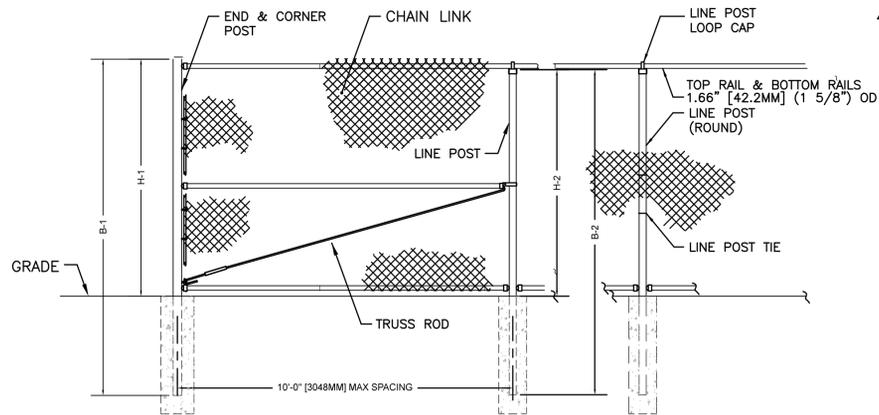


GRAVEL DRIVE DETAIL

N.T.S.

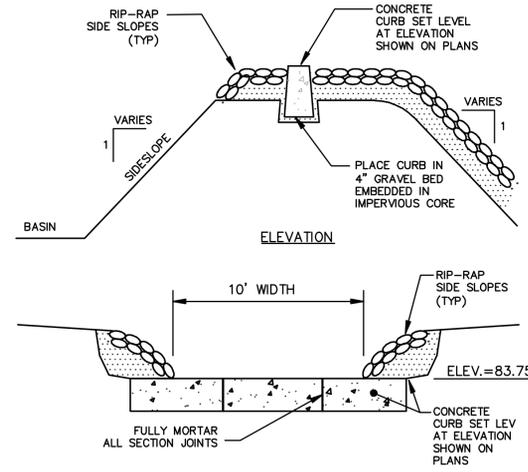
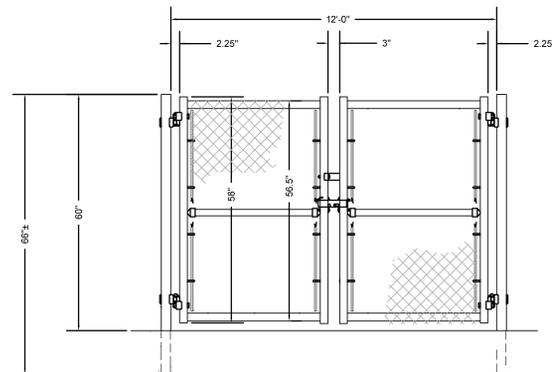
NOTES:

1. ALL CHAIN LINK FENCE FABRIC SHALL BE KNUCKLED (TOP AND BOTTOM)
2. ALL CHAIN LINK FENCE POSTS, FABRIC, TIES AND MATERIALS SHALL BE GALVANIZED
3. CENTER UPRIGHT REQUIRED ON GATE LEAVES 8'-0" & WIDER. CENTER RAIL REQUIRED ON GATE LEAVE 6'-0" & HIGHER.
4. CONCRETE FOOTINGS SHALL BE FOUR (4) x THE POST DIAMETER, OR AS DESIGNATED ON INDIVIDUAL DETAILS.



CHAIN LINK FENCE DETAILS

N.T.S.



BASIN OVERFLOW SPILLWAY DETAIL

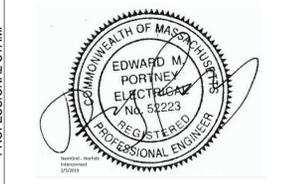
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NEXTGRID PARTNERS - NORFOLK

INTERCONNECTION APPLICATION
 Friday, February 01, 2019



MARK	DATE	DESCRIPTION

CONTRACTOR
 NAME
 STREET
 CITY/ST/ZIP
 NOTES

SITE
 NAME NEXTGRID PARTNERS - NORFOLK
 STREET 41 MEETING HOUSE ROAD
 CITY/ST/ZIP NORFOLK, MA 02056
 NOTES

DRAWING
 FILE NAME 2019-0128 NextGrid Partners - Norfolk.pln
 SCALE AS NOTED
 DRAWN BY NL DATE DRAFTED: 2/1/2019
 CHECKED BY TP SHEET SIZE: ARCH D
 DRAWING NO. PV601
 DRAWING TITLE SINGLE LINE

SITE CONDITIONS

LOCATION: NORFOLK, MA
 MAX AVG TEMP: 28 °C
 MIN EXPECTED TEMP: -19 °C

18 MODULE SOURCE CIRCUIT OUTPUT	
Voc:	864.0 Vdc
Voc (Temp Adjusted):	970.4 Vdc
Isc:	9.83 Adc
Vmp:	703.8 Vdc
Imp:	9.33 Adc

PV ARRAY CONFIGURATION

Manufacturer: HANWHA - Q.CELLS
 Model: Q.PEAK L-G4.2 365
 Module Qty: 684
 Modules per String: 18
 Total series strings: 38

PV INVERTER OUTPUT (SOLECTRIA XGI 1000-65)	
Max Rated Power	65 kWac
Operating Voltage (Line-to-Line):	480 Vac 3-PHASE
Max Current:	78.2 Aac
Output Frequency:	60 Hz

PV MODULE OUTPUT*

Voc:	48.00 Vdc
Voc Temp Coeff.:	-0.28 %/ °C
Voc (Temp Adjusted):	53.91 Vdc
Isc:	9.83 Adc
Vmp:	39.10 Vdc
Imp:	9.33 Adc

TRANSFORMER OUTPUT (225 kVA)	
Max Rated Power	225 kVA
Primary Voltage:	13,800 Vac L-L
Secondary Voltage:	480 Vac
Output Current:	8.16 Aac

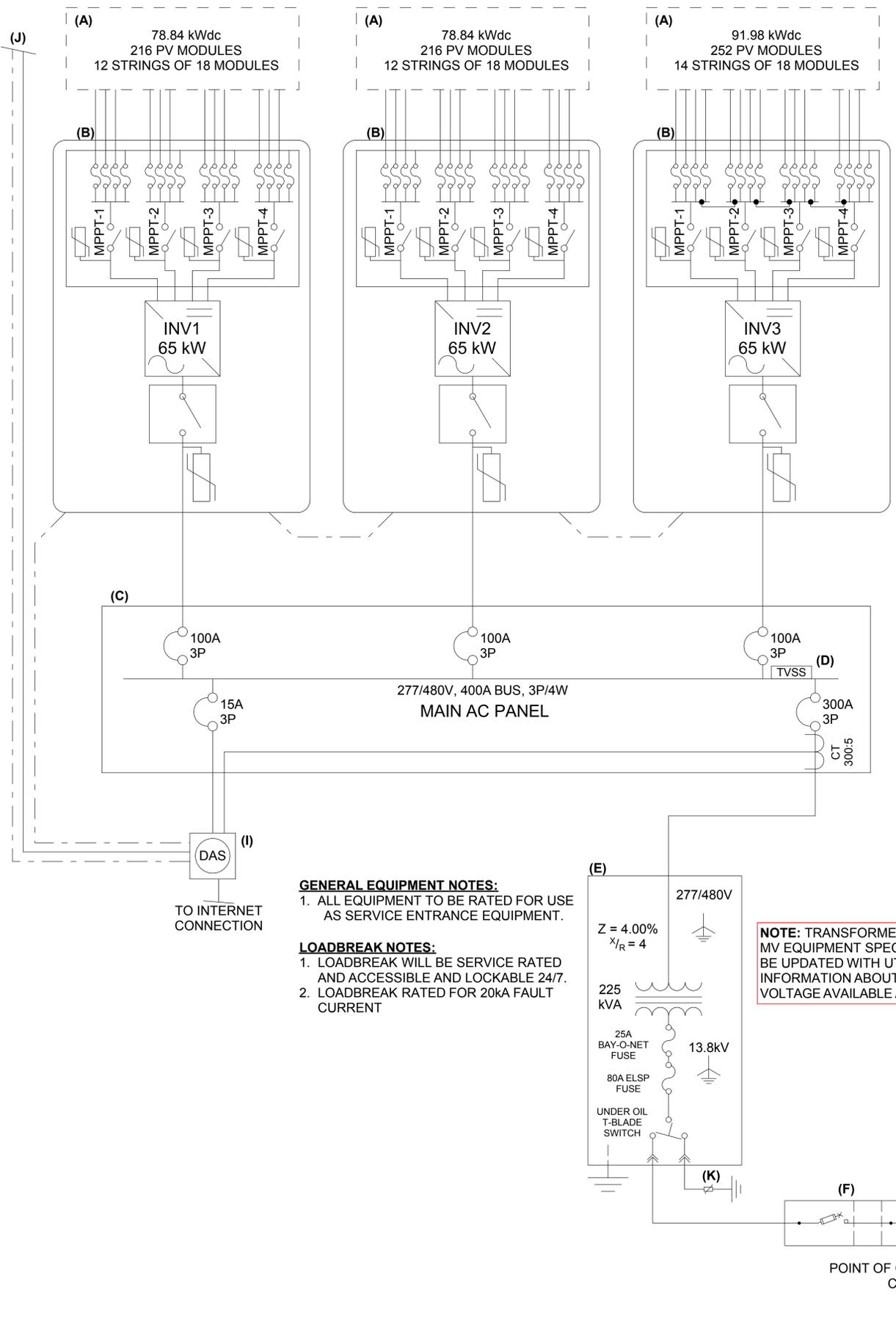
*BASED ON MODULE PERFORMANCE AT STANDARD TEST CONDITIONS (STC)

TABLE 1: PHOTOVOLTAIC SYSTEM EQUIPMENT LIST

ID	DESCRIPTION	QUANTITY
(A)	HANWHA Q CELLS 365W PV MODULE, Q.PEAK DUO L-G5.2 365	684
(B)	SOLECTRIA XGI-10000-65/65 INVERTER, 65kW, 78.2A CONTINUOUS OUTPUT, 277/480VAC, INTEGRATED AC AND DC SURGE SUPPRESSION, DUAL AC AND DC DISCONNECT, AFCI, 15A DC INPUT FUSES, WITH JUMPERS FOR PARALLELING INPUTS	3
(C)	PV PANELBOARD, 277/480V, 400A BUSBAR WITH 300A MAIN BREAKER, BRANCH BREAKERS AS NOTED, NEMA3R	1
(D)	TRANSIENT VOLTAGE SURGE SUPPRESSOR INTEGRATED INTO PANEL, 120KA MINIMUM RATING	1
(E)	225kVA PAD MOUNTED TRANSFORMER, 277/480VAC Yg SECONDARY, 7.96/13.8kV Yg PRIMARY, Z=4.00%, X _R /R= 4.00, 25A DUAL SENSE BAY-O-NET FUSE, 80A ELSP FUSE, PRIMARY TAPS 2.5% & 5% ABOVE & BELOW NOMINAL 22.8kV, 200A LOADBREAK ELBOWS	1
(F)	NEW CUSTOMER OWNED PMH-4 LOADBREAK OR EQUIVALENT, WITH 20E FUSES, PAD MOUNT, 15KV CLASS, RATED FOR USE AS SERVICE ENTRANCE	1
(G)	NEW UTILITY OWNED PAD MOUNT PRIMARY METER, SERVES AS SMART PROGRAM METER	1
(H)	NEW UTILITY OWNED PAD MOUNT LOADBREAK WITH FUSES	1
(I)	DAS FOR PV SYSTEM PRODUCTION	1
(J)	WEATHER STATION IN ARRAY FIELD, CUSTOMER OWNED AND SPECIFIED	1
(K)	10kV, 8.40kV MCOV LIGHTNING ARRESTORS, DISTRIBUTION CLASS	1

TABLE 2: TRIP LEVEL SETTINGS TO STOP INVERTER V_{NOM} = 277V L-G

ID	DESCRIPTION	DEFAULT SET	DEFAULT TIME
1	LINE UNDER VOLTAGE (FAST)	138.5 V	1.1 SEC
2	LINE UNDER VOLTAGE (SLOW)	243.7 V	2.0 SEC
4	LINE OVER VOLTAGE (SLOW)	304.7 V	2.0 SEC
5	LINE OVER VOLTAGE (FAST)	332.4 V	0.16 SEC
6	LINE UNDER FREQUENCY (FAST)	56.5 Hz	0.16 SEC
7	LINE UNDER FREQUENCY (SLOW)	58.5 Hz	300 SEC
8	LINE OVER FREQUENCY (SLOW)	61.2 Hz	300 SEC
9	LINE OVER FREQUENCY (FAST)	62.0 Hz	0.16 SEC
10	UTILITY RESTORATION DETECTION	263.1 ≤ V ≤ 290.8V 59.5 ≤ f ≤ 60.5	300 SEC



- GENERAL EQUIPMENT NOTES:**
 1. ALL EQUIPMENT TO BE RATED FOR USE AS SERVICE ENTRANCE EQUIPMENT.
- LOADBREAK NOTES:**
 1. LOADBREAK WILL BE SERVICE RATED AND ACCESSIBLE AND LOCKABLE 24/7.
 2. LOADBREAK RATED FOR 20KA FAULT CURRENT

NOTE: TRANSFORMER AND OTHER MV EQUIPMENT SPECIFICATIONS TO BE UPDATED WITH UTILITY PROVIDED INFORMATION ABOUT THE LINE VOLTAGE AVAILABLE AT THE SITE

1 195.00 kWac (249.66 kWdc) SINGLE LINE

