

LOCUS MAP

# GROUND MOUNTED SOLAR ARRAY

## 41 MEETING HOUSE ROAD

( T A X M A P 14 P L A T 41 L O T 9 )

## NORFOLK, MASSACHUSETTS



66 SANDRA WAY  
PLYMOUTH, MA 02360  
P:774.269.1861

FOR APPROVAL

PROJECT  
GROUND MOUNTED  
SOLAR ARRAY  
41 MEETINGHOUSE ROAD  
NORFOLK, MASSACHUSETTS

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

**DRAWING INDEX**

SHEET #	DESCRIPTION
CV-1	COVER SHEET
EX-1	EXISTING CONDITIONS PLAN
EC-1	SEDIMENT & EROSION CONTROL PLAN
C-1	PROPOSED SITE PLAN
C-2	PROPOSED GRADING & DRAINAGE PLAN
C-3	SITE DETAIL PLAN 1 OF 2
C-4	SITE DETAIL PLAN 2 OF 2

**REFERENCE PLANS**

PHOTOVOLTAIC SYSTEM FOR NEXTGRID PARTNERS



**OWNER**

NORFOLK TOWN CENTER CONDOMINIUM TRUST  
33 MEETING HOUSE RD  
NORFOLK, MA 02056

**APPLICANT**

NEXTGRID INC.  
P.O. BOX 7775 #3069  
SAN FRANCISCO, CA 94120

**ENGINEER**

CLC DESIGN  
66 SANDRA WAY  
PLYMOUTH, MA 02360

**SURVEYOR**

MCKENZIE ENGINEERING GROUP, INC.  
150 LONGWATER DRIVE, SUITE 101  
NORWELL, MA 02061

REVISIONS

NO.	DATE	DESCRIPTION
1	2/24/20	PEER REVIEW COMMENTS

CADD FILE	
DESIGNED BY	NAC
DRAWN BY	NAC
CHECKED BY	NAC
DATE	1-3-20
DRAWING SCALE	N.T.S.

GRAPHIC SCALE

SHEET TITLE

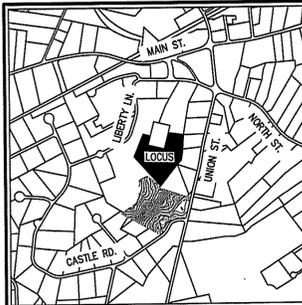
COVER SHEET

DRAWING NO.

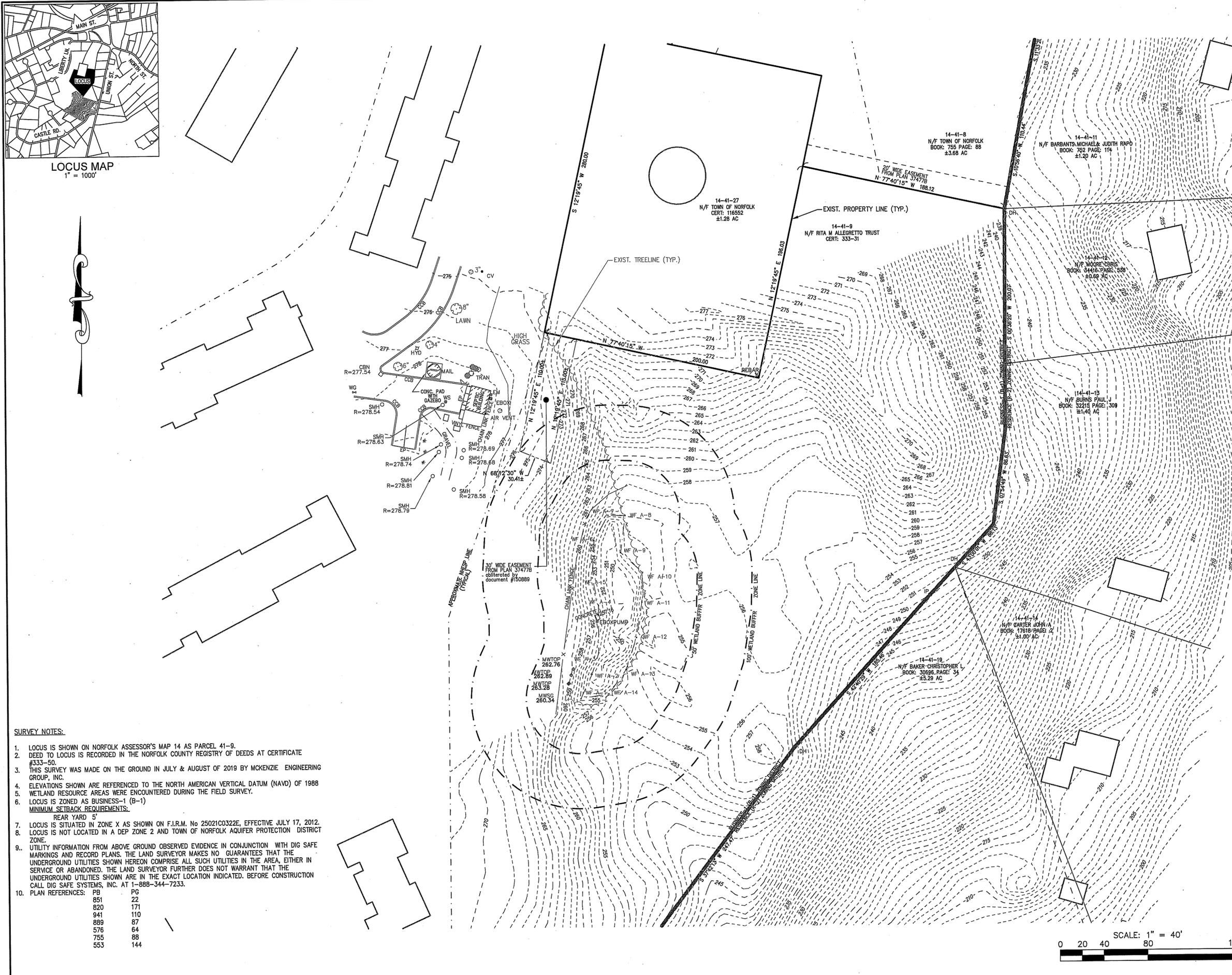
CV-1

PROJECT NO. 2019-010

**PERMIT SET**



LOCUS MAP  
1" = 1000'



### LEGEND

**SURVEY SYMBOLS**

- REBAR
- ANGLE IRON
- CB/DH CONCRETE BOUND WITH DRILL HOLE
- SB STONE BOUND
- SB/DH STONE BOUND WITH DRILL HOLE

**UTILITY SYMBOLS**

- CHIMNEY
- ELECTRIC HAND HOLE
- GUY POLE
- GW GUY WIRE
- HVAC UNIT
- BUILDING LIGHT W/MAST
- BUILDING LIGHT
- TRANSFORMER
- WATER GATE
- EXH EXHAUST VENT
- AIR VENT
- DRAINAGE SLUMP
- SMH SEWER MANHOLE
- DMH DRAIN MANHOLE
- TMH TELEPHONE MANHOLE
- CBN DRAINAGE CATCH BASIN
- CBN DOOR WAY THRESHOLD
- HYDRANT
- POST INDICATOR VALVE
- UTILITY POLE
- YARD LIGHT
- RIP RAP
- BOLLARD
- SIGN
- FA FIRE ALARM
- DECIDUOUS TREE
- CONIFEROUS TREE

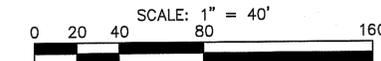
**LINE DESIGNATORS**

- WATER MAIN
- HANDRAIL
- JERSEY BARRIER
- GUARD RAIL
- OVERHEAD WIRES
- GAS LINE
- WS WATER SERVICE
- UNDERGROUND ELECTRIC
- STORM DRAIN LINE
- SANITARY SEWER LINE
- DRAINAGE SWALE
- CHAIN LINK FENCE

**ABBREVIATIONS**

- FFE FIRST FLOOR ELEVATION
- BIT CONC. BITUMINOUS CONCRETE PAVEMENT
- CCB CURE COOL BEAM
- EP EDGE OF PAVEMENT
- (AM) AS MEASURED
- BC BITUMINOUS CONCRETE CURB
- RET WALL RETAINING WALL
- CONC. CONCRETE
- RCP REINFORCED CONCRETE PIPE
- VCC VERTICAL GRANITE CURB
- ETW EDGE OF TRAVEL WAY
- MTL METAL BERM
- VCC VERTICAL CONCRETE CURB
- CMP CORRUGATED METAL PIPE

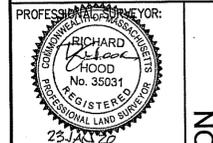
- SURVEY NOTES:**
- LOCUS IS SHOWN ON NORFOLK ASSESSOR'S MAP 14 AS PARCEL 41-9.
  - DEED TO LOCUS IS RECORDED IN THE NORFOLK COUNTY REGISTRY OF DEEDS AT CERTIFICATE #333-50.
  - THIS SURVEY WAS MADE ON THE GROUND IN JULY & AUGUST OF 2019 BY MCKENZIE ENGINEERING GROUP, INC.
  - ELEVATIONS SHOWN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.
  - WETLAND RESOURCE AREAS WERE ENCOUNTERED DURING THE FIELD SURVEY.
  - LOCUS IS ZONED AS BUSINESS-1 (B-1)  
**MINIMUM SETBACK REQUIREMENTS:**  
REAR YARD 5'
  - LOCUS IS SITUATED IN ZONE X AS SHOWN ON F.I.R.M. No 25021C0322E, EFFECTIVE JULY 17, 2012.
  - LOCUS IS NOT LOCATED IN A DEP ZONE 2 AND TOWN OF NORFOLK AQUIFER PROTECTION DISTRICT ZONE.
  - UTILITY INFORMATION FROM ABOVE GROUND OBSERVED EVIDENCE IN CONJUNCTION WITH DIG SAFE MARKINGS AND RECORD PLANS. THE LAND SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN HEREON COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE LAND SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. BEFORE CONSTRUCTION CALL DIG SAFE SYSTEMS, INC. AT 1-888-344-7233.
  - PLAN REFERENCES:
- |     |     |
|-----|-----|
| PB  | PG  |
| 851 | 22  |
| 820 | 171 |
| 941 | 110 |
| 889 | 87  |
| 576 | 64  |
| 755 | 88  |
| 553 | 144 |



REV	DATE	DESCRIPTION	BY	APP
1	1/7/2020	SOUTH CONTOURS	RTLS	MAC
1	1/10/2020	WETLAND FLAGS	RTLS	MAC



**EXISTING CONDITIONS PLAN**  
(PARCEL ID: 14-41-9)  
41 MEETING HOUSE ROAD  
NORFOLK, MASSACHUSETTS

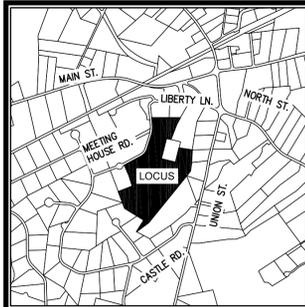


OWNERS/APPLICANT:  
NEXT GRID PARTNERS - NOROLK  
41 MEETING HOUSE LANE  
NORFOLK, MASSACHUSETTS

DRAWN BY: ESS  
DESIGNED BY: ESS  
CHECKED BY: RTLS  
APPROVED BY: RJH  
DATE: AUGUST 2, 2019  
SCALE: 1" = 40'  
PROJECT NO.: 219-144  
DWG. TITLE:

**EXISTING CONDITIONS PLAN**  
DWG. NO: EX-1

NOT FOR CONSTRUCTION



LOCUS MAP



**GENERAL CONSTRUCTION SEQUENCE:**

1. CONTRACTOR SHALL NOTIFY DIG-SAFE A MINIMUM OF 48-HRS PRIOR TO START OF ANY CONSTRUCTION.
2. CONTRACTOR TO INSTALL ALL PERIMETER EROSION CONTROL MEASURE PRIOR TO START ON ANY CLEARING OR GRADING.
3. FOLLOWING INSTALLATION AND APPROVAL OF PERIMETER EROSION CONTROL, CONTRACTOR TO CLEAR AND GRUB THE PROPOSED AREA.
4. FOLLOWING CLEARING AND GRUBBING, CONTRACTOR TO BUILD THE PROPOSED DETENTION POND AND SEED THE AREA TO STABILIZE.
5. ONCE THE DETENTION POND IS CONSTRUCTED AND EROSION CONTROL AROUND POND IS INSTALLED, CONTRACTOR TO GRADE ALL AREAS TO FINISH GRADE.
6. FOLLOWING GRADING, CONTRACTOR SHALL CONSTRUCT ENTRANCE DRIVE AND INSTALL ALL SOLAR ARRAYS.
7. FOLLOWING COMPLETION OF SOLAR ARRAY, CONTRACTOR SHALL SEED ALL DISTURBED AREAS. AREAS WHERE SLOPE IS GREATER THAN 3:1 SHALL RECEIVE SLOPE STABILIZATION FABRIC PRIOR TO SEEDING.

**CLCDESIGN**  
 66 SANDRA WAY  
 PLYMOUTH, MA 02360  
 P:774.269.1861

FOR APPROVAL

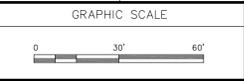
PROJECT  
**GROUND MOUNTED SOLAR ARRAY**  
 41 MEETINGHOUSE ROAD  
 NORFOLK, MASSACHUSETTS

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

REVISIONS

NO.	DATE	DESCRIPTION
3	2/7/20	PEER REVIEW COMMENTS
2	1/24/20	PEER REVIEW COMMENTS
1	1/13/20	PEER REVIEW COMMENTS

CADD FILE	
DESIGNED BY	NAC
DRAWN BY	NAC
CHECKED BY	NAC
DATE	12-4-19
DRAWING SCALE	1"=30'-0"



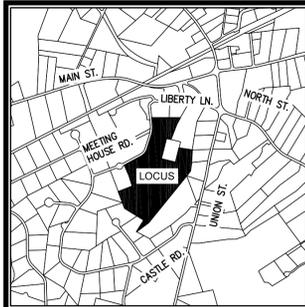
SHEET TITLE

**SEDIMENT & EROSION CONTROL PLAN**

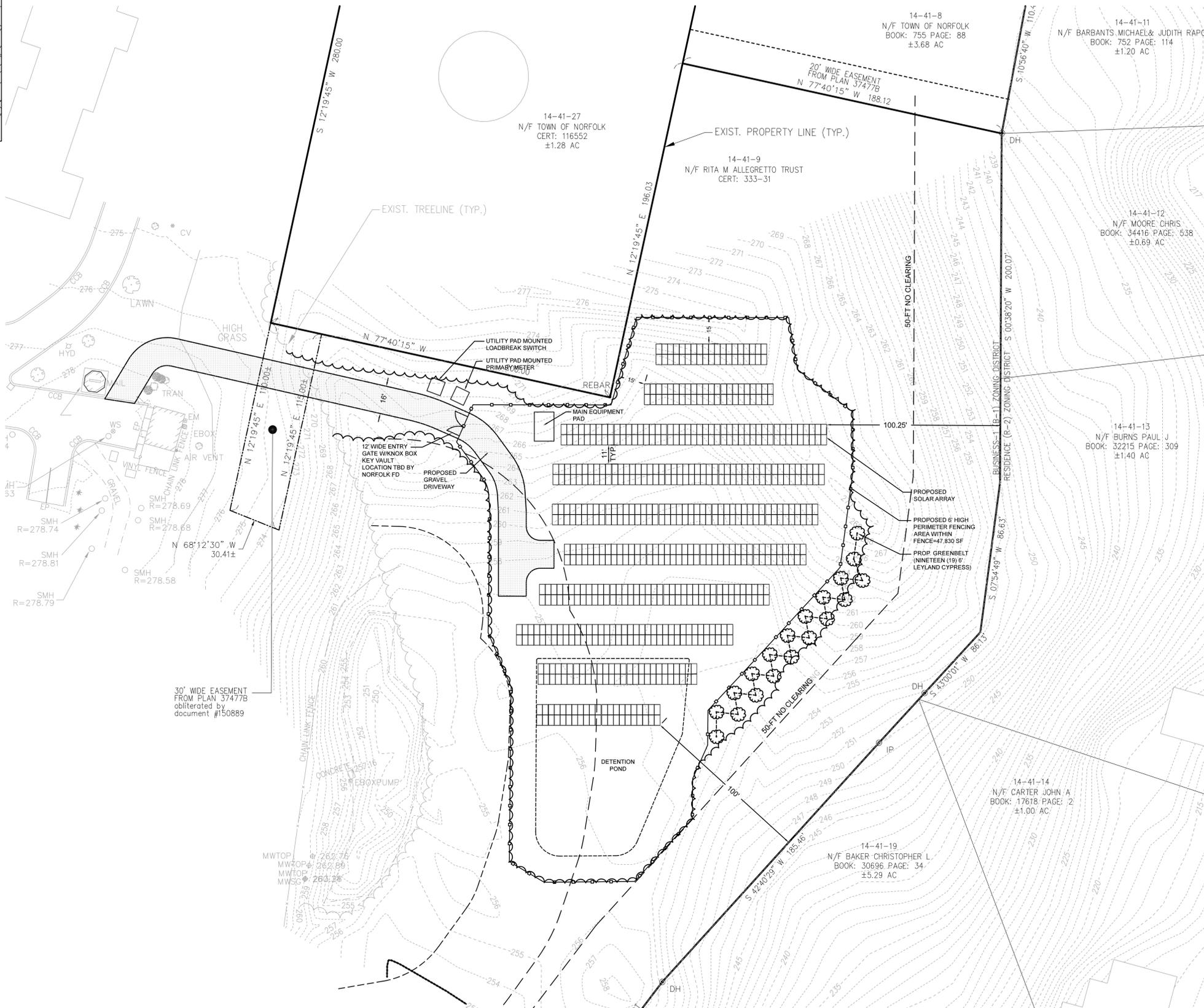
DRAWING NO.  
**EC-1**

PROJECT NO. 2019-010

**PERMIT SET**



LOCUS MAP



**ZONING**

ZONING DISTRICT: B-1  
ZONING SUBDISTRICT: BUSINESS CORE

ZONING TABLE	REQUIRED	PROVIDED
LOT AREA	30,000 S.F.	689,794 S.F.
FRONTAGE	75.0'	302.91'
LOT BLDG. COVERAGE 80% MAX.	N/A	N/A
MAX. BLDG. HEIGHT	40.0'	N/A
<b>SETBACKS</b>		
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.

**CLCDESIGN**  
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FOR APPROVAL

PROJECT  
**GROUND MOUNTED SOLAR ARRAY**  
41 MEETINGHOUSE ROAD  
NORFOLK, MASSACHUSETTS

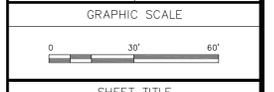
OWNER  
NEXTGRID INC.  
PO BOX 7775 #73069  
SAN FRANCISCO, CA 94120

REVISIONS

NO.	DATE	DESCRIPTION
5	3/5/20	LANDSCAPING
4	2/7/20	PEER REVIEW COMMENTS
3	1/24/20	PEER REVIEW COMMENTS
2	1/13/20	PEER REVIEW COMMENTS
1	12/3/19	PEER REVIEW COMMENTS

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**

DRAWING NO.

**C-1**

PROJECT NO. 2019-010

**PERMIT SET**

FOR APPROVAL

PROJECT  
**GROUND MOUNTED  
SOLAR ARRAY**  
OWNER  
**41 MEETINGHOUSE ROAD  
NORFOLK, MASSACHUSETTS**

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

REVISIONS

NO.	DATE	DESCRIPTION
3	2/7/20	PEER REVIEW COMMENTS
3	1/24/20	PEER REVIEW COMMENTS
2	1/13/20	PEER REVIEW COMMENTS
1	12/3/19	PEER REVIEW COMMENTS

CADD FILE	
DESIGNED BY	NAC
DRAWN BY	NAC
CHECKED BY	NAC
DATE	9-23-19
DRAWING SCALE	1"=20'-0"

GRAPHIC SCALE



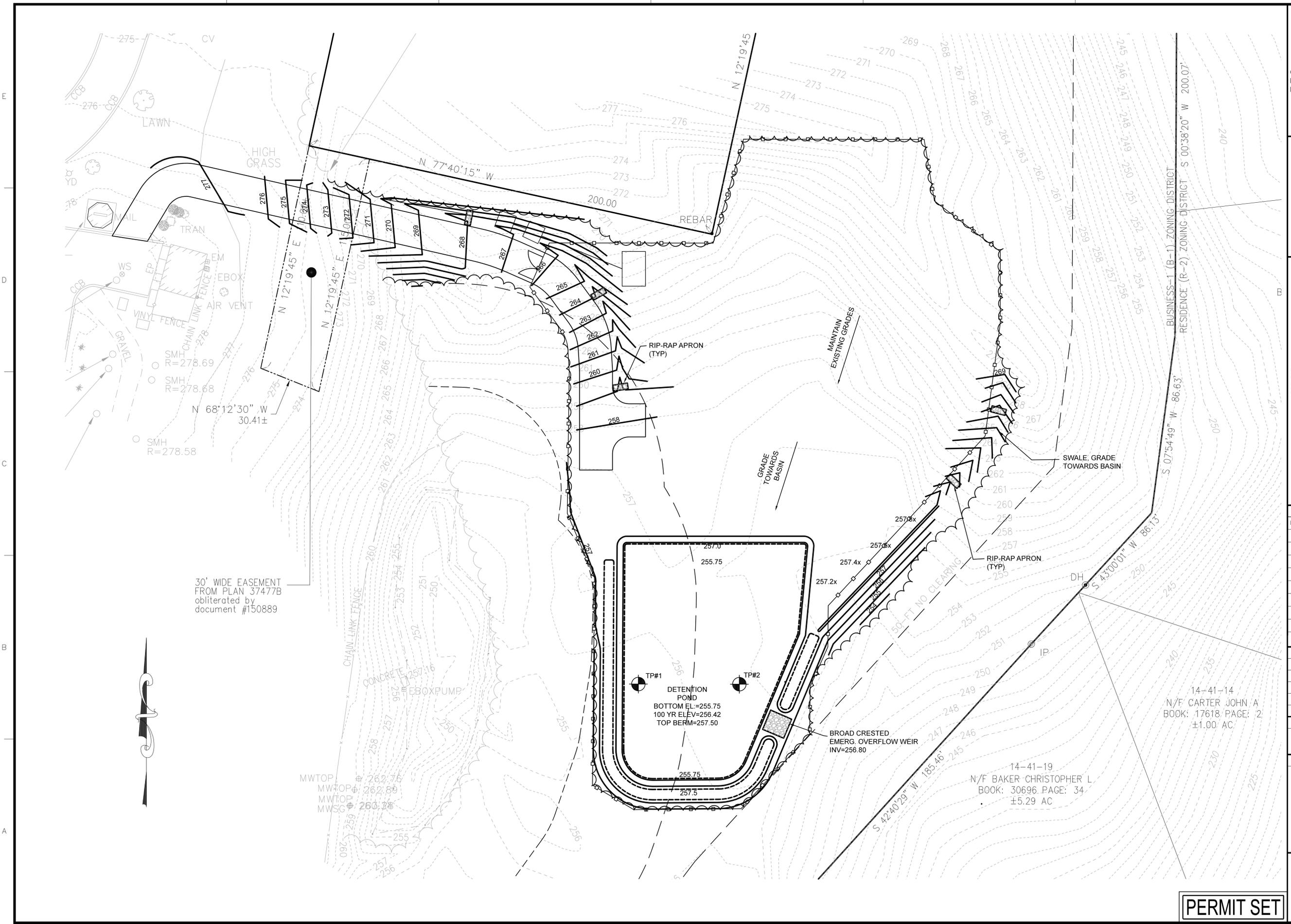
SHEET TITLE

**PROPOSED  
GRADING &  
DRAINAGE PLAN**

DRAWING NO.

**C-2**

PROJECT NO. 2019-010



**PERMIT SET**

FOR APPROVAL

PROJECT  
GROUND MOUNTED  
SOLAR ARRAY  
41 MEETINGHOUSE ROAD  
NORFOLK, MASSACHUSETTS

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

REVISIONS

NO.	DATE	DESCRIPTION
3	2/4/20	PEER REVIEW COMMENTS
2	1/24/20	PEER REVIEW COMMENTS
1	12/3/19	PEER REVIEW COMMENTS

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

GRAPHIC SCALE

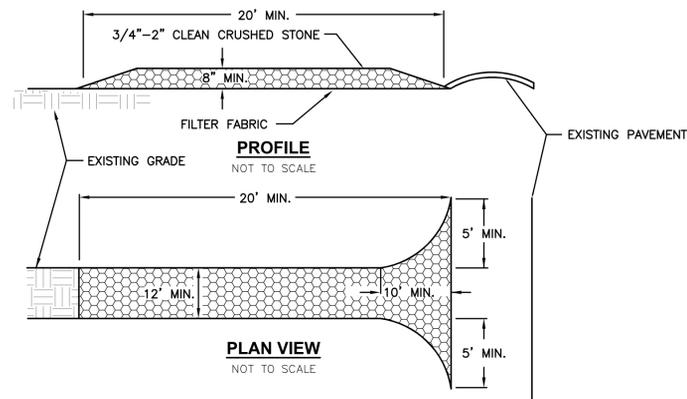
SHEET TITLE

SITE  
DETAIL  
PLAN  
1 OF 2

DRAWING NO.

C-3

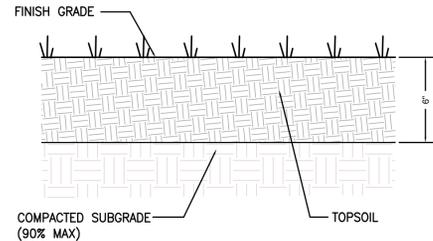
PROJECT NO. 2019-010



- NOTES:**
- STONE SIZE - USE 3/4"-2" CLEAN WASHED STONE.
  - LENGTH - NOT LESS THAN 40 FEET.
  - THICKNESS - NOT LESS THAN (8) INCHES.
  - 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.
  - FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
  - 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.
  - 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.
  - WHEN WASHING IS REQUIRED. IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
  - PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

**STABILIZED CONSTRUCTION ENTRANCE**

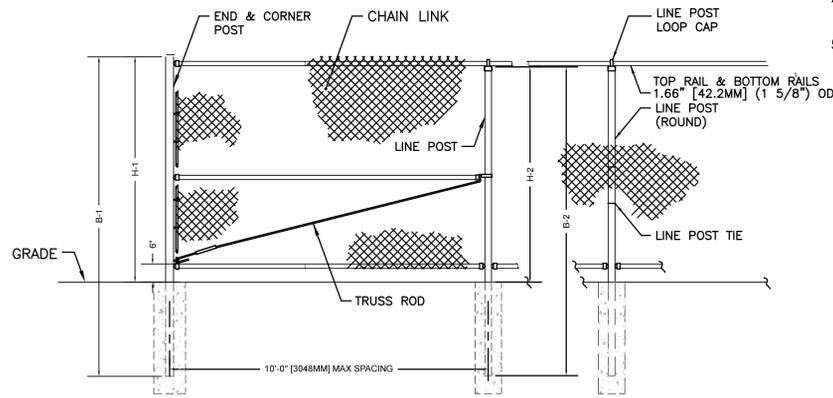
N.T.S.



**LOAM AND SEED DETAIL (DISTURBED AREAS)**

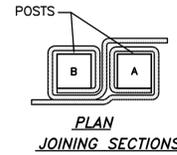
N.T.S.

FENCE HEIGHT	END & CORNER POSTS		LINE POSTS	
	NOMINAL HEIGHT	B-1 BAR LENGTH	H-1 HEIGHT ABOVE GRADE	B-2 BAR LENGTH
6'-0"	9'-0"	6'-0 5/8"	8'-8"	5'-8 7/8"

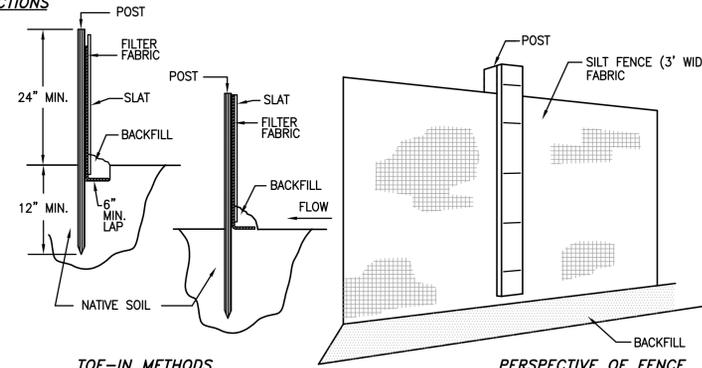


**CHAIN LINK FENCE DETAILS**

N.T.S.



**PLAN JOINING SECTIONS**



**TOE-IN METHODS**

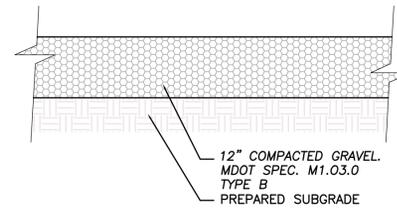
**PERSPECTIVE OF FENCE**

**NOTES:**

- EXCAVATE A 6"x6" TRENCH ALONG THE LINE OF EROSION CONTROL OF THE SITE.
- UNROLL SILTATION FENCE AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH (NET SIDE AWAY FROM FLOW DIRECTION).
- 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 & TAMPING FILL AT THE BASE.

**SILTATION FENCE DETAIL**

N.T.S.

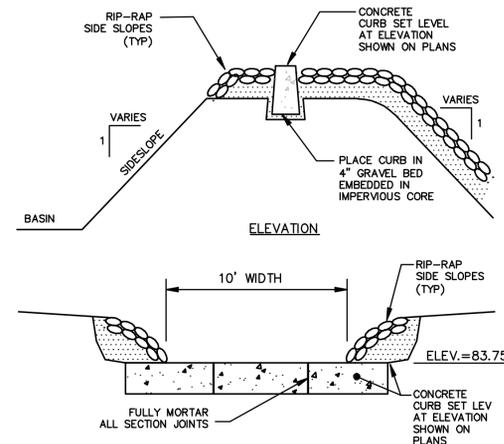
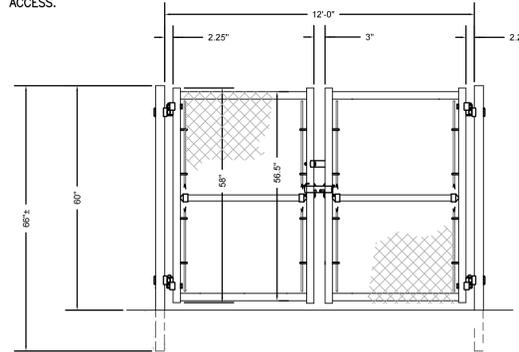


**GRAVEL DRIVE DETAIL**

N.T.S.

**NOTES:**

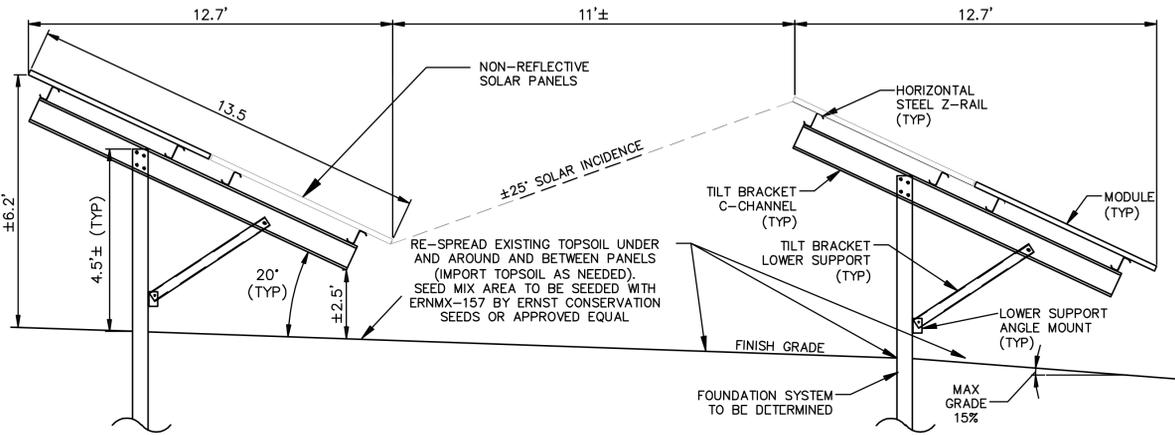
- ALL CHAIN LINK FENCE FABRIC SHALL BE KNUCKLED (TOP AND BOTTOM)
- ALL CHAIN LINK FENCE POSTS, FABRIC, TIES AND MATERIALS SHALL BE BLACK VINYL COATED
- CENTER UPRIGHT REQUIRED ON GATE LEAVES 8'-0" & WIDER. CENTER RAIL REQUIRED ON GATE LEAVE 6'-0" & HIGHER.
- CONCRETE FOOTINGS SHALL BE FOUR (4) X THE POST DIAMETER, OR AS DESIGNATED ON INDIVIDUAL DETAILS.
- PROVIDE 6" GAP FROM BOTTOM OF FENCE TO EXISTING GROUND FOR WILDLIFE ACCESS.



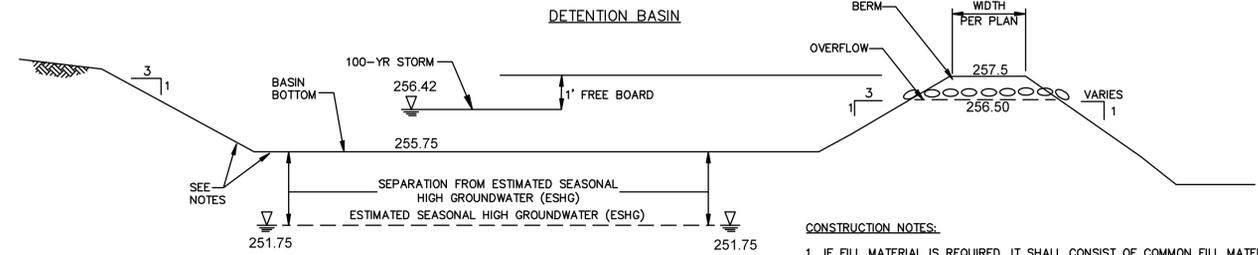
**BASIN OVERFLOW SPILLWAY DETAIL**

N.T.S.

**PERMIT SET**



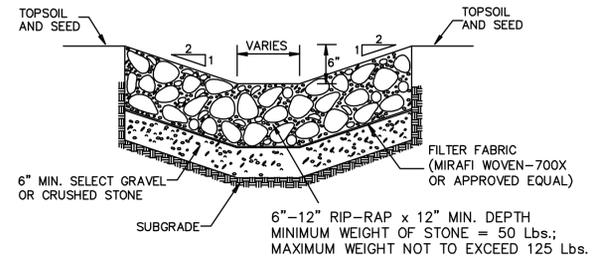
**SECTION VIEW - PANEL/RACK ASSEMBLY**  
N.T.S.



**CONSTRUCTION NOTES:**

- IF FILL MATERIAL IS REQUIRED, IT SHALL CONSIST OF COMMON FILL MATERIAL FREE OF ORGANICS, FROZEN SOIL AND ROCKS GREATER THAN 6" IN DIAMETER.
- THE BASIN SIDESLOPES AND BOTTOM SHALL BE STABILIZED USING GRASS SEED MIXTURES CAPABLE OF RESISTING THE ANTICIPATED SHEARING FORCES ASSOCIATED WITH RUN-OFF VELOCITIES. THE SEED MIXTURES SHALL BE ABLE TO WITHSTAND PERIODIC INUNDATION UNDER WATER AND BE DROUGHT TOLERANT DURING SUMMER MONTHS. 6" MIN. LOAM REQUIRED.
- ANY SLOPE STEEPER THAN 3:1 SHALL BE EQUIPPED WITH SLOPE STABILIZATION FABRIC OR EROSION CONTROL MATTING.
- CONTRACTOR SHALL INSTALL ONE (1) MONITORING WELL AFTER CONSTRUCTION OF THE DETENTION POND.

**DETENTION BASIN SECTION**  
N.T.S.



**RIP-RAP APRON CHANNEL**  
N.T.S.

**EROSION CONTROL NOTES:**

- PRIOR TO COMMENCING SITE WORK OR EARTHWORK OPERATIONS, INSTALL EROSION CONTROL BARRIERS AND MAINTAIN THROUGHOUT CONSTRUCTION.
- ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
- ALL MATERIALS AND STOCKPILES SHALL BE STORED ON LEVEL AREAS OUTSIDE OF ANY FLOOD ZONES, WETLANDS OR BUFFER ZONE AREAS. ALL STOCKPILES SHALL BE SURROUNDED BY SILT SOCK, SHALL HAVE SIDE SLOPES NO GREATER THAN 30% AND SHALL BE SEEDED OR STABILIZED IF LEFT UNDISTURBED FOR TWO WEEKS OR MORE.
- SEDIMENTATION CONTROL DEVICES AND EROSION CONTROL BARRIERS SHALL BE INSPECTED WEEKLY AND MAINTAINED AS NECESSARY THROUGHOUT ALL PHASES OF CONSTRUCTION AND PROMPTLY AFTER EACH RAINFALL.
- ANY SLOPE STEEPER AND 3:1 SHALL BE EQUIPPED WITH SLOPE STABILIZATION FABRIC OR EROSION CONTROL MATTING.
- ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTITUTED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER AND/OR THE TOWN.
- THE CONTRACTOR MUST REPAIR OR RE-SEED ANY AREAS THAT DO NOT DEVELOP WITHIN A PERIOD OF ONE YEAR AT NO ADDITIONAL EXPENSE TO THE OWNER.
- MATERIAL STOCKPILES SHALL NOT BE LOCATED WITHIN THE PATH OF EXISTING OR PROPOSED WATERCOURSES (BOTH TEMPORARY OR PERMANENT) OR THOSE AREAS SUBJECT TO STORM WATER FLOW.
- SEDIMENT CONTROL DEVICES AND EROSION CONTROL BARRIERS MAY BE REMOVED ONLY AFTER THE SITE HAS BEEN STABILIZED.
- ALL DISTURBED OR EXPOSED AREAS SUBJECT TO EROSION, WHICH REMAIN DISTURBED BUT INACTIVE FOR AT LEAST 15 DAYS, SHALL RECEIVE TEMPORARY SEEDING IN ACCORDANCE WITH THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES. IN ALL CASES, STABILIZATION MEASURES SHALL BE IMPLEMENTED AS SOON AS POSSIBLE IN ACCORDANCE WITH THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES.
- EARTHWORK ACTIVITY ON THE SITE SHALL BE DONE IN A MANNER SUCH THAT RUNOFF IS DIRECTED AWAY FROM ABUTTING STRUCTURES, PROPERTY, ETC.
- THE CONTRACTOR SHALL KEEP ON SITE AT ALL TIMES ADDITIONAL SILT SOCK AND EXTRA SILTATION FENCING FOR INSTALLATION AT THE DIRECTION OF THE ENGINEERS OR THE PLANNING BOARD TO MITIGATE ANY EMERGENCY CONTROL.
- REFER TO CONSTRUCTION DETAILS FOR ADDITIONAL EROSION CONTROL MEASURES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SITING, RELOCATION AND AUGMENTATION OF EROSION CONTROL DEVICES AS THE PROJECT PROGRESSES AND THE SITE DRAINAGE CONDITIONS CHANGE.
- THE CONTRACTOR SHALL MINIMIZE THE AREA OF DISTURBED SOIL. EFFORTS SHALL BE MADE TO LIMIT THE TIME OF EXPOSURE OF DISTURBED AREAS.
- ANY DISTURBED SOILS NOT PERMANENTLY STABILIZED PRIOR TO OCTOBER 15 OF ANY YEAR SHALL BE TEMPORARILY STABILIZED TO PREVENT EROSION UNTIL ACTIVE USE RESUMES.
- SEDIMENT CONTROLS SHALL NOT CONTAIN ANY NYLON MESH OR NETTING FOUND TO BE A HAZARD TO LOCAL WILDLIFE. HAYBALES SHALL NOT BE USED AS SEDIMENT CONTROL DUE TO THE POTENTIAL TO SPREAD INVASIVE PLANT SPECIES. 100% BIO-DEGRADABLE CONTROLS ARE PREFERRED, SUCH AS ROLLED EROSION CONTROL PRODUCTS (I.E., MULCH CONTROL NETTING, EROSION CONTROL BLANKETS, TURF MATS, MULCH SOCKS, FIBER ROLLS, WATTLES, ETC.) WHICH MUST BE 100% NATURAL BIO-DEGRADABLE MATERIAL. PHOTO-DEGRADABLE, UV DEGRADABLE OR OXO-(BIO)DEGRADABLE PLASTICS ARE NOT CONSIDERED BIO-DEGRADABLE.

**CONSTRUCTION PERIOD STORMWATER OPERATION AND MAINTENANCE:**

**SCHEDULE:**

EROSION CONTROL BARRIERS: EROSION CONTROL BARRIERS (SILT SOCK, ETC.) SHOULD BE INSPECTED IMMEDIATELY AFTER EACH RUN-OFF PRODUCING RAINFALL EVENT AND AT LEAST DAILY DURING PROLONGED RAINFALL. SEDIMENT DEPOSITS MUST BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER. SEDIMENT SHOULD BE DISPOSED OF IN A SUITABLE AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURAL OR VEGETATIVE MEANS.

**NOTES:**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSPECTION AND MAINTENANCE OF ALL STORMWATER AND EROSION CONTROL FACILITIES UNTIL THE PROJECT CONSTRUCTION IS COMPLETED. THE CONTRACTOR SHALL CLEAN ALL COMPONENTS OF THE STORMWATER MANAGEMENT SYSTEM AT THE COMPLETION OF CONSTRUCTION, IMMEDIATELY PRIOR TO TURNING OVER OPERATION AND MAINTENANCE RESPONSIBILITY TO THE PROJECT PROPONENT.
- UPON COMPLETION OF CONSTRUCTION, THE OPERATION AND MAINTENANCE OF ALL COMPONENTS OF THE STORMWATER MANAGEMENT SYSTEM WILL BE THE RESPONSIBILITY OF THE SYSTEM OWNER:

NEXTGRID INC.  
PO BOX 7775  
SAN FRANCISCO, CA 94123

THE SYSTEM OWNER SHALL COMPLY WITH THE POST CONSTRUCTION LONG TERM STORMWATER OPERATION AND MAINTENANCE PLAN APPROVED FOR THIS PROJECT.

- DISPOSAL OF ACCUMULATED SEDIMENT AND HYDROCARBONS TO BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL GUIDELINES AND REGULATIONS.
- THERE SHALL BE NO ILLICIT DISCHARGE OF ANY WASTE OR WASTE WATER INTO THE STORMWATER MANAGEMENT SYSTEM. THE MAINTENANCE OF THE FACILITY SHALL BE UNDERTAKEN IN SUCH A MANNER AS TO PREVENT ANY DISCHARGE OF WASTE OR WASTE WATER INTO STORMWATER MANAGEMENT SYSTEM. ANY WASTE OIL OR OTHER WASTE PRODUCTS GENERATED DURING MAINTENANCE SHALL BE PROPERLY DISPOSED OF OFF SITE.

**CONSTRUCTION NOTES:**

- THE PROPERTY LINES AND EXISTING CONDITIONS SHOWN HEREON ARE BASED UPON A PARTIAL FIELD SURVEY BY MCKENZIE ENGINEERING GROUP, INC.
- THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS SHOWN AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES THAT MAY BE FOUND IN THE PLAN.
- CONTRACTOR SHALL VERIFY ALL CRITICAL ELEVATIONS AND INVERTS PRIOR TO CONSTRUCTION.
- SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONTAINERS OR FACILITIES THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS SITE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY DIGSAFE, THE TOWN OF NORFOLK HIGHWAY DEPARTMENT AND ALL UTILITY COMPANIES A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION ACTIVITIES FOR LOCATION OF ALL UNDERGROUND UTILITIES AND UTILITY COMPANY APPROVALS.
- THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVES. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL UTILITIES AND RIM AND INVERTS BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES THAT MIGHT OCCUR BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENTS OF ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES WITH THE UTILITY COMPANY, IF NECESSARY. IF ANY INTERRUPTIONS IN SERVICE ARE NECESSARY TO ABUTTING PROPERTY OWNERS, A MINIMUM OF 48 HOURS NOTICE SHALL BE GIVEN.
- THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL MEASURES IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND MASSACHUSETTS HIGHWAY DEPARTMENT REQUIREMENTS FOR ALL WORK WITHIN PUBLIC STREETS.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATION SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL REQUIRED INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY COMPANIES ARE COMPLETED PRIOR TO INSTALLATION, BACKFILLING, ANNOUNCED BUILDING POSSESSION, AND THE FINAL CONNECTION OF SERVICES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE RECORDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED.
- THE CONTRACTOR SHALL INSTITUTE AND MAINTAIN ALL SAFETY MEASURES NECESSARY TO PROTECT THE PUBLIC DURING CONSTRUCTION, INCLUDING, BUT NOT LIMITED TO BARRICADES, SIGNS, FENCES, FLAGGERS, LIGHTING, POLICE DETAIL, AND ANY OTHER MEANS AS DIRECTED BY THE TOWN. NO TRENCHES ARE TO REMAIN OPEN OVERNIGHT.
- THE CONTRACTOR SHALL KEEP THE PREMISES FREE FROM THE ACCUMULATION OF WASTE MATERIAL AND OTHER DEBRIS RESULTING FROM THE WORK. AT THE END OF CONSTRUCTION THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS AND SURPLUS MATERIALS FROM THE SITE. A THOROUGH INSPECTION OF THE WORK PERIMETER IS TO BE MADE AND ALL DISCARDED MATERIALS, BLOWN OR WATER CARRIED DEBRIS, SHALL BE COLLECTED AND REMOVED FROM THE SITE.
- ALL WORK SHALL BE DONE IN STRICT COMPLIANCE WITH ALL APPROVED PERMITS AND WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES, STANDARDS, ORDINANCES, RULES AND REGULATIONS.
- CONTRACTOR TO DESIGNATE A SPECIFIC AREA FOR COMBUSTIBLE MATERIALS, APPROVED BY THE FIRE DEPARTMENT, SO THAT COMBUSTIBLES ARE NOT SPREAD THROUGHOUT THE CONSTRUCTION SITE.
- THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR CONSTRUCTION ACTIVITIES FOR THIS PROJECT.

**FOR APPROVAL**

PROJECT  
**GROUND MOUNTED SOLAR ARRAY**  
41 MEETINGHOUSE ROAD  
NORFOLK, MASSACHUSETTS

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

REVISIONS		
NO.	DATE	DESCRIPTION
4	2/7/20	PEER REVIEW COMMENTS
3	1/24/20	PEER REVIEW COMMENTS
2	1/13/20	PEER REVIEW COMMENTS
1	12/31/19	PEER REVIEW COMMENTS

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  
2 OF 2**

DRAWING NO.

**C-4**

**PERMIT SET**

# PHOTOVOLTAIC SYSTEM FOR NEXTGRID PARTNERS - NORFOLK

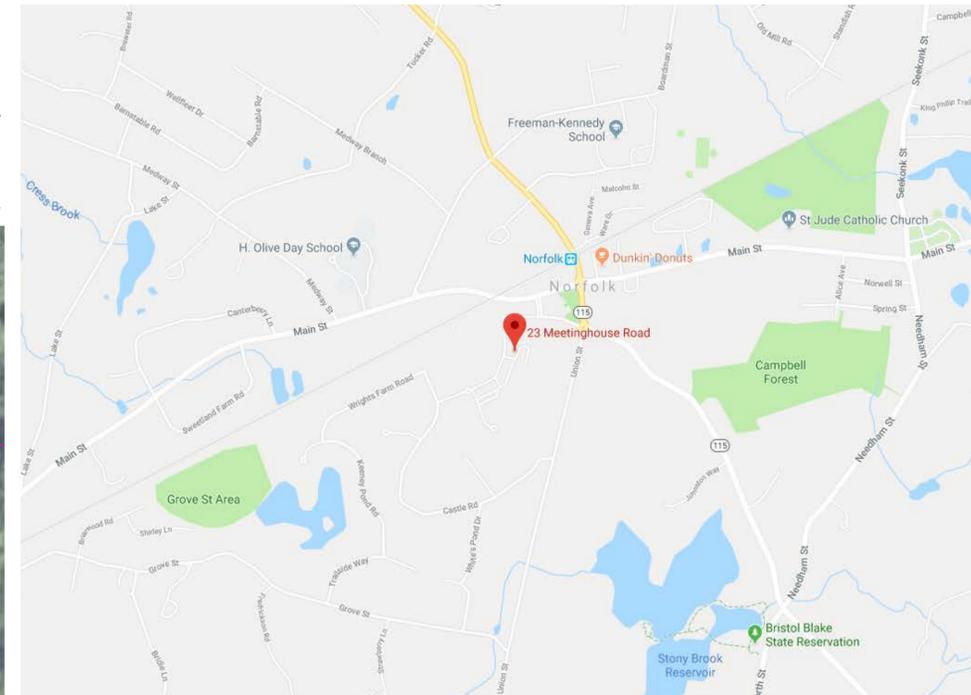
41 MEETING HOUSE ROAD, NORFOLK MA 02056



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.

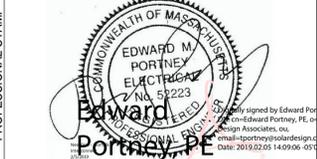
NOT FOR CONSTRUCTION

THIS DRAWING IS FOR INFORMATION PURPOSES ONLY. CERTIFICATION OR VALIDATION IS TO BE DONE BY A PROFESSIONAL WITH EXPERTISE IN THE REQUIRED FIELD AND A LICENSE IN THE STATE THAT THE INSTALLATION WILL RESIDE. CERTIFICATION OR VALIDATION TO BE INCLUDED AS PART OF THE SUBMITTALS FOR PERMITTING OF THE OVERALL PROJECT.

## 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: 2/1/2019
CHECKED BY	TP SHEET SIZE: ARCH D

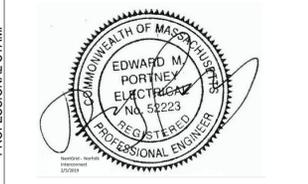
DRAWING NO.	PV001
DRAWING TITLE	PV SITE PLAN

NOT FOR CONSTRUCTION

THIS DRAWING IS FOR INFORMATION PURPOSES ONLY. CERTIFICATION OR VALIDATION IS TO BE DONE BY A PROFESSIONAL WITH EXPERTISE IN THE REQUIRED FIELD AND A LICENSE IN THE STATE THAT THE INSTALLATION WILL RESIDE. CERTIFICATION OR VALIDATION TO BE INCLUDED AS PART OF THE SUBMITTALS FOR PERMITTING OF THE OVERALL PROJECT.

**NEXTGRID PARTNERS - NORFOLK**

INTERCONNECTION APPLICATION  
 Friday, February 01, 2019



MARK	DATE	DESCRIPTION

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

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

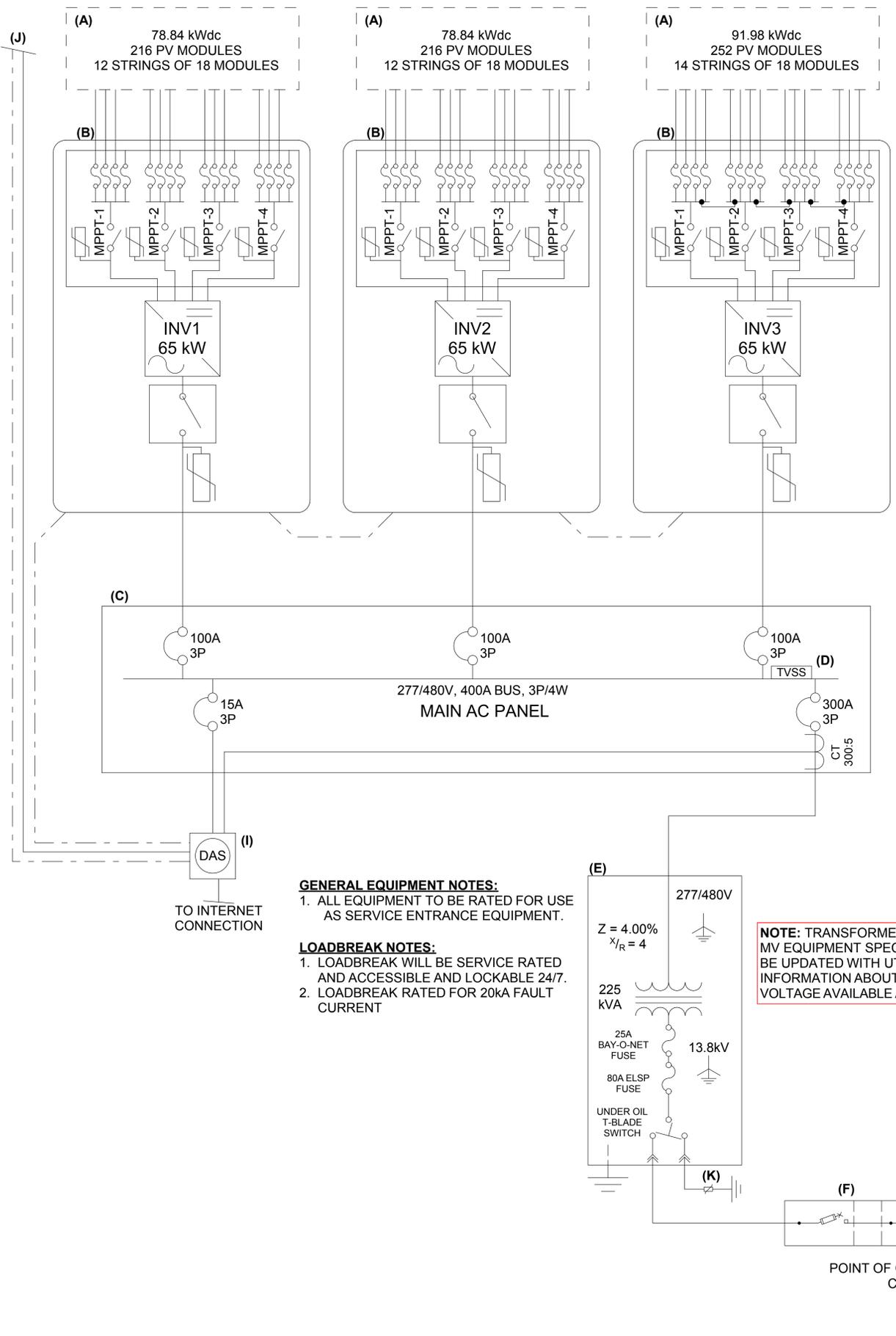
FILE NAME: 2019-0128 NextGrid Partners - Norfolk.pln  
 SCALE: AS NOTED  
 DRAWN BY: NL DATE DRAFTED: 2/1/2019  
 CHECKED BY: TP SHEET SIZE: ARCH D  
 DRAWING NO: **PV601**  
 DRAWING TITLE: SINGLE LINE

SITE CONDITIONS		NORFOLK, MA		18 MODULE SOURCE CIRCUIT OUTPUT	
LOCATION:	NORFOLK, MA	Voc:	864.0	Vdc	
MAX AVG TEMP:	28 °C	Voc (Temp Adjusted):	970.4	Vdc	
MIN EXPECTED TEMP:	-19 °C	Isc:	9.83	Adc	
		Vmp:	703.8	Vdc	
		Imp:	9.33	Adc	
PV ARRAY CONFIGURATION		PV INVERTER OUTPUT (SOLECTRIA XGI 1000-65)		TRANSFORMER OUTPUT (225 kVA)	
Manufacturer:	HANWHA - Q.CELLS	Max Rated Power	65	kWac	
Model:	Q.PEAK L-G4.2 365	Operating Voltage (Line-to-Line):	480	Vac 3-PHASE	
Module Qty:	684	Max Current:	78.2	Aac	
Modules per String:	18	Output Frequency:	60	Hz	
Total series strings:	38				
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			

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

ITEM	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 <sub>R</sub> /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

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

powered by **Q.ANTUM**

# Q.PEAK L-G4.2 360-370

**Q.ANTUM SOLAR MODULE**



The new solar module Q.PEAK L-G4.2 with power classes up to 370Wp is the strongest module of its type on the market globally. Powered by 72 Q.ANTUM solar cells Q.PEAK L-G4.2 was specially designed for large solar power plants to reduce BOS costs. Only Q CELLS offers German engineering quality with our unique Q CELLS Yield Security.

- LOW ELECTRICITY GENERATION COSTS**  
Higher yield per surface area and lower BOS costs thanks to higher power classes and an efficiency rate of up to 18.8%.
  - INNOVATIVE ALL-WEATHER TECHNOLOGY**  
Optimal yields, whatever the weather with excellent low-light and temperature behavior.
  - ENDURING HIGH PERFORMANCE**  
Long-term yield accuracy with Anti-LID Technology, Anti-PID Technology\*, Hot-Spot Protect and Traceability Technology™.
  - EXTREME WEATHER RATING**  
High-tech aluminum alloy frame, certified for high snow (5400Pa) and wind loads (2400Pa).
  - A RELIABLE INVESTMENT**  
Inclusive 12-year product warranty and 25-year linear performance guarantee\*.
- THE IDEAL SOLUTION FOR:**
- Large power plants
- Engineered in Germany
- Q CELLS**

### MECHANICAL SPECIFICATION

Panel: 78.5 in x 39.4 in x 1.38 in (including frame)  
Dimensions x (Depth x Height)

Weight: 52.8 lbs (24 kg)  
Front Glass: 0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflector technology

Back Cover: Composite film

Frame: Anodized aluminum

Cell: 6 x 12 monocrystalline Q.ANTUM solar cells

Junction Box: 3.36 x 3.74 in x 2.36 x 1.54 in x 0.59 x 0.75 in (85.11 x 93.89 x 15.19 mm), Protective class IP67 with surge protection

Cable: 4mm² Solar cables (1+1) x 47.24 in (1200 mm), (1+1) x 47.24 in (1200 mm)

Connector: MC4 or MC4-EVO 2, 3, 4, 5 and 6P/6S

### ELECTRICAL CHARACTERISTICS

Parameter	Unit	300	350	370
Minimum Performance at Standard Test Conditions (STC) (POWER TOLERANCE ±0.5%)				
Power at MPPT	P <sub>MPPT</sub> (W)	360	365	370
Short Circuit Current*	I <sub>sc</sub> (A)	9.77	9.83	9.89
Open Circuit Voltage*	V <sub>oc</sub> (V)	47.71	48.00	48.28
Current at MPPT	I <sub>MPPT</sub> (A)	9.26	9.31	9.41
Voltage at MPPT*	V <sub>MPPT</sub> (V)	38.89	39.10	39.32
Efficiency*	η (%)	21.81	21.83	21.84

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS (NOCT)

Parameter	Unit	300	350	370
Power at MPPT	P <sub>MPPT</sub> (W)	296.4	270.1	273.8
Short Circuit Current*	I <sub>sc</sub> (A)	7.88	7.93	7.97
Open Circuit Voltage*	V <sub>oc</sub> (V)	44.63	44.90	45.17
Current at MPPT	I <sub>MPPT</sub> (A)	7.27	7.34	7.42
Voltage at MPPT*	V <sub>MPPT</sub> (V)	36.43	36.51	36.58

1000W/m², 21°C, spectrum AM 1.5G, \*Measurement tolerance DC ±3%, AC ±1%, \*\*NOCT: NOCT<sub>cell</sub> = 45°C, \*\*NOCT: NOCT<sub>module</sub> = 45°C, \*\*NOCT: NOCT<sub>cell</sub> = 45°C, \*\*NOCT: NOCT<sub>module</sub> = 45°C

PERFORMANCE AT LOW IRRADIANCE

At least 1% of nominal power (40W) at 100W/m², Transfer time: 0.5% (typ.)

At least 0.5% of nominal power up to 100W/m², Transfer time: 0.5% (typ.)

At least 0.1% of nominal power up to 25W/m², Transfer time: 0.5% (typ.)

At all given irradiance conditions, full operation is guaranteed with the energy of the Q CELLS module.

Special module performance under irradiance conditions in comparison to STC conditions (25°C, 1000W/m²)

### TEMPERATURE COEFFICIENTS

Parameter	Unit	Value	Temperature Coefficient of P <sub>MPPT</sub>	Value
Temperature Coefficient of P <sub>MPPT</sub>	%/K	-0.38	Temperature Coefficient of V <sub>oc</sub>	-0.28
Temperature Coefficient of V <sub>oc</sub>	%/K	-0.38	Temperature Coefficient of I <sub>sc</sub>	0.05

PROPERTIES FOR SYSTEM DESIGN

Parameter	Unit	Value	Parameter	Unit	Value
Maximum System Voltage (V <sub>DC</sub> )	V	1500 (IEC) / 1500 (UL)	Safety Class		2
Maximum System Fault Rating	IEC 60384-1	20	Free Rating		C-UL20 (TYPE 1, 50.0)
Design load, peak (W)	W	75 (5000VA)	Permitted ambient temperature	°C	-40°F to +135°F
Design load, peak (V)	V	1500	Max. installation height	m	1.40 (45.93)
Design load, peak (A)	A	31.5 (6300VA)	Max. installation height	ft	4.59 (15.08)

INSTALLATION INFORMATION

Number of Modules per Panel: 22  
Number of Panels per String: 18  
Number of Panels per String: 18  
Panel Dimensions (L x W): 81.3 x 45.5 x 16.9 mm (31.61 x 17.91 x 0.67 in)

Weight: 52.8 lbs (24 kg)

WARRANTY INFORMATION

Warranty: 12 years product warranty and 25-year linear performance guarantee.

Engineered in Germany

**Q CELLS**

### S&C Manual PMH Pad-Mounted Gear

**GENERAL**

Specify S&C Manual Pad-Mounted Gear for the no-compromise performance and classic quality needed for your underground distribution applications. It's the complete switching and protection package that brings you the ideal combination of ratings, configurations, components, and features—it's easy to select, easy to install, and easy to operate.

S&C Manual PMH Pad-Mounted Gear—incorporating S&C Mini Ripper® Switches and S&C Power Fuses with Uni Ripper™ air-free standing, self-supporting enclosures—is available in a variety of circuit configurations to allow you to tailor medium-voltage switching and protection packages to your underground distribution applications. These PMH models, which are available in ratings of 1.4 kV and 2.5 kV, feature external handle-operated 600-ampere Mini Ripper Switches for three-pole switching of source circuits. S&C Mini Ripper Switches are specifically designed to handle all three-phase live-switching duties including full-load and associated transformer magnetizing and cable-charging currents... plus fault-drooping operations. Follower circuits may be provided with Mini Ripper Switches for 600-ampere three-pole switching or break-stick operated S&C Power Fuses with Uni Ripper for 2000- or 4000-ampere single-pole switching plus protection.

PMH models accommodate a choice of S&C SMI Power Fuses or S&C Fault Filter® Electronic Power Fuses. Permanently accurate SMI-20 and SMI-42 Power Fuses and Fault Filter Electronic Power Fuses, available in a wide choice of ampere ratings and time-current characteristics, provide superb protection against the full spectrum of fault currents and precise coordination with all upstream and downstream protective devices. After a fault occurs, only the interrupting coil unit or fuse unit of the power fuse, or the interrupting module of the electronic fuse, need be replaced while the fault is being located and corrected.

With S&C Pad Mounted Gear, you get in-air visibility, in-air switching, and in-air insulation. Ready-visible components give the operator the ability to visualize the circuit configuration and all of the components being operated. Open switch gaps are easily established and verified... unlike gear with hidden switches which require no cumbersome procedures are required to establish working clearances. Full visibility allows easy identification of blown fuses, and there is no messy reworking of contact with live parts. Interphase and end barriers (where required) of the same material are provided with each switch for Bill, ratings and with each set of fuses for phase segregation and to facilitate fuse handling. Additional barriers of fiberglass-reinforced polyester separate fuses and rear compartments and isolate the tie bus. Full-depth end barriers separate adjoining compartments. Each switch, fuse, and bus terminal is provided with a ground stud as is each ground pad.

S&C Manual PMH Pad-Mounted Gear is available in 12 models with switches and fuses in circuit configurations to fit every requirement... giving you complete flexibility in designing your underground system. S&C has drawn up an inventory of basic design concepts developed through more than 60 years of design and manufacturing, pad-mounted gear to create the most reliable, safe, and efficient underground distribution of construction eliminates drawing preparation time and dramatically reduces drawing approval time, bringing you all the economies to be realized from repetitive manufacture.

When the application is simply switching and protection of an individual transformer, or a complex scheme requiring sectionalizing and/or multiple tapping of a primary feeder to serve transformers or laterals, S&C Pad Mounted Gear does it all.

**PMH Models**



Figure 1. S&C Pad-Mounted Gear is available in a wide choice of pre-engineered models. Use these circuit configurations to solve your underground switching and protection problems... the system design possibilities are virtually unlimited.

Engineered in Germany

**Q CELLS**

### 662-30 DESCRIPTIVE BULLETIN

Page 2 of 20  
May 31, 1994

S&C ELECTRIC COMPANY • Chicago  
S&C ELECTRIC CANADA LTD. • Toronto

### COOPER POWER SERIES

## Current sensing Bay-O-Net fuse link

**General**

Each provides both distribution apparatus from damaging currents and distribution systems from faulted apparatus with Cooper Power series current sensing Bay-O-Net fuse link that is used in Eaton's Cooper Power series Bay-O-Net fuse assemblies (see Catalog CA132009EN, S&C Manual and Current-Sensing Bay-O-Net Fuse Assemblies). They are used on single-phase conventional and nonconventional distribution transformers and other apparatus rated through 500 kVA, and on three-phase distribution apparatus through 1000 kVA.

A Bay-O-Net fuse is ideal for use in a two-fuse protection scheme with a current-limiting backup fuse. In this arrangement, secondary faults and overload currents are cleared by the Bay-O-Net fuse, and high-level faults are cleared by the current-limiting backup fuse. The Bay-O-Net fuse will not be used in series with a current-limiting fuse, an isolation link is required. (See Catalog CA132009EN for details.)

Bay-O-Net fuses are comparable in cost to internal cartridge fuses but have the advantage of being field-replaceable. Bay-O-Net fuses can easily be coordinated with other devices.

**INSTALLATION**

No special tools are required. A hotstick is used to remove the Bay-O-Net fuse carriage holder from the pre-mounted apparatus. The fuse cartridge is then replaced, and the holder reinserted using a hotstick. Refer to General Information MV132009EN Bay-O-Net Fuse Re-fusing Installation Instructions for re-fusing instructions.

**Ordering Information**

To order a current sensing Bay-O-Net fuse link, determine the requirements of the application from Tables 3 and 4 and specify the fuse required from Table 2.

**Table 1. Electrical Ratings and Characteristics**

Voltage (kV)	Catalog Number	Maximum Single-Phase Interrupting Rating*		
		Current-Limiting Assembly (in Bay-O-Net)	Backup-Mounted Assembly (in Bay-O-Net)	Stand-Alone Assembly (in Bay-O-Net)
8.3	35204-036	3000 A	3000 A	3000 A
	35219-012	2500 A	2500 A	2500 A
15.5	35214-012	2500 A	2500 A	2500 A
	35204-036	2500 A	2500 A	2500 A
23.0	35219-012	2500 A	2500 A	2500 A
	35214-012	2500 A	2500 A	2500 A

\* In Eaton's Cooper Power series Bay-O-Net assemblies only. Where available, fault current exceeds rated value, coordinated current limiting fuses such as an ELP Eaton CA133109EN or approved equivalent are required.

**Table 2. Bay-O-Net Fuse Link**

Current Rating (kA)	Catalog Number
1	49202020
10	49202020
15	49202020
25	49202020
40	49202020
60	49202020
100	49202020
160	49202020

Engineered in Germany

**Q CELLS**

### GENERAL — Continued

12 models of manual S&C PMH Pad-Mounted Gear allow you the greatest flexibility in designing reliable and economical underground distribution systems to serve industrial, institutional, commercial, and residential applications.

When the application is simply switching and protection of an individual transformer, or a complex scheme requiring sectionalizing and/or multiple tapping of a primary feeder to serve transformers or laterals, S&C Pad Mounted Gear does it all.

**General**

Eaton offers its Cooper Power™ series ELP current-limiting backup fuse that is used in series with low current primary protection devices such as a Bay-O-Net fuse or its Cooper Power series Magnex™ interrupter.

The ELP Fuse is designed for use in transformer oil, Encapsulating™ (EPO™) fluid, or an approved equivalent.

The fuse's highly efficient current-limiting section minimizes the effects of high fault current stresses on equipment and the distribution system. Its minimum interrupting rating is coordinated with that of a current interrupter to avoid undesirable low current operation, yet its maximum interrupting rating will clear the highest fault currents likely to occur. Higher continuous current ratings can be achieved by connecting two fuses in parallel.

**Application**

The ELP Fuse is used in transformers to protect and isolate faulted primary equipment. When connected in series with a low current primary protection device, the fuse becomes an element of a two-part protection system that gives a full range of fault protection.

This two-part system provides low current protection with the replaceable equipluse fuse or replaceable Magnex™ interrupter, and it adds the energy-limiting protection of a current-limiting fuse. Together, they coordinate easily with upstream and downstream devices.

**Table 3. Dimensional Information**

Voltage (kV)	Current Rating (kA)	ELP Fuse Part Number	Dimension Table 3 (mm)	Dimension Table 3 (inches)	Description
8.3	10	CB-03080200	272.00	10.71	3.82
	15	CB-03080300	272.00	10.71	3.82
	20	CB-03080400	272.00	10.71	3.82
	25	CB-03080500	272.00	10.71	3.82
	30	CB-03080600	272.00	10.71	3.82
	35	CB-03080700	272.00	10.71	3.82
	40	CB-03080800	272.00	10.71	3.82
	45	CB-03080900	272.00	10.71	3.82
	50	CB-03081000	272.00	10.71	3.82
	55	CB-03081100	272.00	10.71	3.82
	60	CB-03081200	272.00	10.71	3.82
	65	CB-03081300	272.00	10.71	3.82
15.5	10	CB-03150200	317.00	12.48	4.52
	15	CB-03150300	317.00	12.48	4.52
	20	CB-03150400	317.00	12.48	4.52
	25	CB-03150500	317.00	12.48	4.52
	30	CB-03150600	317.00	12.48	4.52
	35	CB-03150700	317.00	12.48	4.52
	40	CB-03150800	317.00	12.48	4.52
	45	CB-03150900	317.00	12.48	4.52
	50	CB-03151000	317.00	12.48	4.52
	55	CB-03151100	317.00	12.48	4.52
	60	CB-03151200	317.00	12.48	4.52
	65	CB-03151300	317.00	12.48	4.52
23.0	10	CB-03230200	362.00	14.25	5.22
	15	CB-03230300	362.00	14.25	5.22
	20	CB-03230400	362.00	14.25	5.22
	25	CB-03230500	362.00	14.25	5.22
	30	CB-03230600	362.00	14.25	5.22
	35	CB-03230700	362.00	14.25	5.22
	40	CB-03230800	362.00	14.25	5.22
	45	CB-03230900	362.00	14.25	5.22
	50	CB-03231000	362.00	14.25	5.22
	55	CB-03231100	362.00	14.25	5.22
	60	CB-03231200	362.00	14.25	5.22
	65	CB-03231300	362.00	14.25	5.22

Engineered in Germany

**Q CELLS**

### Catalog Data CA132009EN

Effective February 2015

Current sensing Bay-O-Net fuse link

**General**

Each provides both distribution apparatus from damaging currents and distribution systems from faulted apparatus with Cooper Power series current sensing Bay-O-Net fuse link that is used in Eaton's Cooper Power series Bay-O-Net fuse assemblies (see Catalog CA132009EN, S&C Manual and Current-Sensing Bay-O-Net Fuse Assemblies). They are used on single-phase conventional and nonconventional distribution transformers and other apparatus rated through 500 kVA, and on three-phase distribution apparatus through 1000 kVA.

A Bay-O-Net fuse is ideal for use in a two-fuse protection scheme with a current-limiting backup fuse. In this arrangement, secondary faults and overload currents are cleared by the Bay-O-Net fuse, and high-level faults are cleared by the current-limiting backup fuse. The Bay-O-Net fuse will not be used in series with a current-limiting fuse, an isolation link is required. (See Catalog CA132009EN for details.)

Bay-O-Net fuses are comparable in cost to internal cartridge fuses but have the advantage of being field-replaceable. Bay-O-Net fuses can easily be coordinated with other devices.

**INSTALLATION**

No special tools are required. A hotstick is used to remove the Bay-O-Net fuse carriage holder from the pre-mounted apparatus. The fuse cartridge is then replaced, and the holder reinserted using a hotstick. Refer to General Information MV132009EN Bay-O-Net Fuse Re-fusing Installation Instructions for re-fusing instructions.

**Ordering Information**

To order a current sensing Bay-O-Net fuse link, determine the requirements of the application from Tables 3 and 4 and specify the fuse required from Table 2.

**Table 1. Electrical Ratings and Characteristics**

Voltage (kV)	Catalog Number	Maximum Single-Phase Interrupting Rating*		
		Current-Limiting Assembly (in Bay-O-Net)	Backup-Mounted Assembly (in Bay-O-Net)	Stand-Alone Assembly (in Bay-O-Net)
8.3	35204-036	3000 A	3000 A	3000 A
	35219-012	2500 A	2500 A	2500 A
15.5	35214-012	2500 A	2500 A	2500 A
	35204-036	2500 A	2500 A	2500 A
23.0	35219-012	2500 A	2500 A	2500 A
	35214-012	2500 A	2500 A	2500 A

\* In Eaton's Cooper Power series Bay-O-Net assemblies only. Where available, fault current exceeds rated value, coordinated current limiting fuses such as an ELP Eaton CA133109EN or approved equivalent are required.

**Table 2. Bay-O-Net Fuse Link**

Current Rating (kA)	Catalog Number
1	49202020
10	49202020
15	49202020
25	49202020
40	49202020
60	49202020
100	49202020
160	49202020

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**Q CELLS**

# YASKAWA

## SOLECTRIA XGI 1000

### Premium 3-Ph Transformerless Commercial String Inverters

**Specifications**

	XGI 1000-5000	XGI 1000-6000	XGI 1000-8000	XGI 1000-4500
<b>DC Input</b>				
Maximum Maximum Input Voltage	1000 VDC	1000 VDC	1000 VDC	1000 VDC
Maximum Power Input (P <sub>max</sub> )	5000 kW	6000 kW	8000 kW	4500 kW
Operating Voltage Range (MPPT)	500-800 VDC	500-800 VDC	500-800 VDC	500-800 VDC
Maximum Operating Input Current	100 A (200 A Surge)			
Maximum Operating PV Power per MPPT	12.5 kW	15.0 kW	15.0 kW	10.0 kW
Maximum Number of MPPT	12	12	12	12
Number of MPPT Phases	4 (1 Phase)	4 (1 Phase)	4 (1 Phase)	4 (1 Phase)
Number of PV Strings per MPPT	1 to 10	1 to 10	1 to 10	1 to 10
Maximum PV Current per MPPT	60 A / 100 A			
Maximum PV Voltage per MPPT	600 V	600 V	600 V	600 V
Normalized DC-to-AC Ratio	1.0	1.0	1.0	1.0
<b>AC Output</b>				
Normal Output Voltage	480 VAC, 3PH	480 VAC, 3PH	480 VAC, 3PH	480 VAC, 3PH
Output Voltage Range	12 ~ 110%	12 ~ 110%	12 ~ 110%	12 ~ 110%
Continuous Output Power	50 kW	60 kW	80 kW	50 kW
Continuous Output Current	112 A	136 A	177 A	112 A
Normal Output Frequency	60 Hz	60 Hz	60 Hz	60 Hz
Total Harmonic Distortion (THD) % (Ripple)	< 3%	< 3%	< 3%	< 3%
Power Factor (PF)	0.99	0.99	0.99	0.99
Grid Connection Type	3PH-N/0ND	3PH-N/0ND	3PH-N/0ND	3PH-N/0ND
Full-Circuit Breaker (Type)	3PH-N/0ND	3PH-N/0ND	3PH-N/0ND	3PH-N/0ND
Recommended AC Circuit Breaker Rating	60 A	75 A	100 A	60 A
<b>Efficiency</b>				
Peak Efficiency	98.2%	98.2%	98.2%	98.2%
AC Harmonic Loss	0.2%	0.2%	0.2%	0.2%
Standby Loss	< 1 W	< 1 W	< 1 W	< 1 W
<b>Temperature</b>				
Ambient Temperature Range	-10 to 50°C	-10 to 50°C	-10 to 50°C	-10 to 50°C
Storage Temperature Range	-40 to 70°C	-40 to 70°C	-40 to 70°C	-40 to 70°C
Operating Humidity	5% to 95% (non-condensing)			
<b>Communications</b>				
Advanced Digital Data Interface	RS485	RS485	RS485	RS485
Grid-Connected Protection	Anti-Islanding	Anti-Islanding	Anti-Islanding	Anti-Islanding
Three-Phase Monitoring/Protection	Yes	Yes	Yes	Yes
Remote Monitoring/Protection	Optional	Optional	Optional	Optional
Remote Grid Monitoring	Optional	Optional	Optional	Optional
Remote Diagnostics	Optional	Optional	Optional	Optional
<b>Long-Term Certifications</b>				
UL 1741 (IEEE 1547), UL 1686, UL 1988	Yes	Yes	Yes	Yes
Advanced Safety Features	Yes	Yes	Yes	Yes
EMC Compliance	Yes	Yes	Yes	Yes
<b>Warranty</b>				
Standard Limited Warranty	10 Years	10 Years	10 Years	10 Years
Advanced Limited Warranty	10 Years	10 Years		