

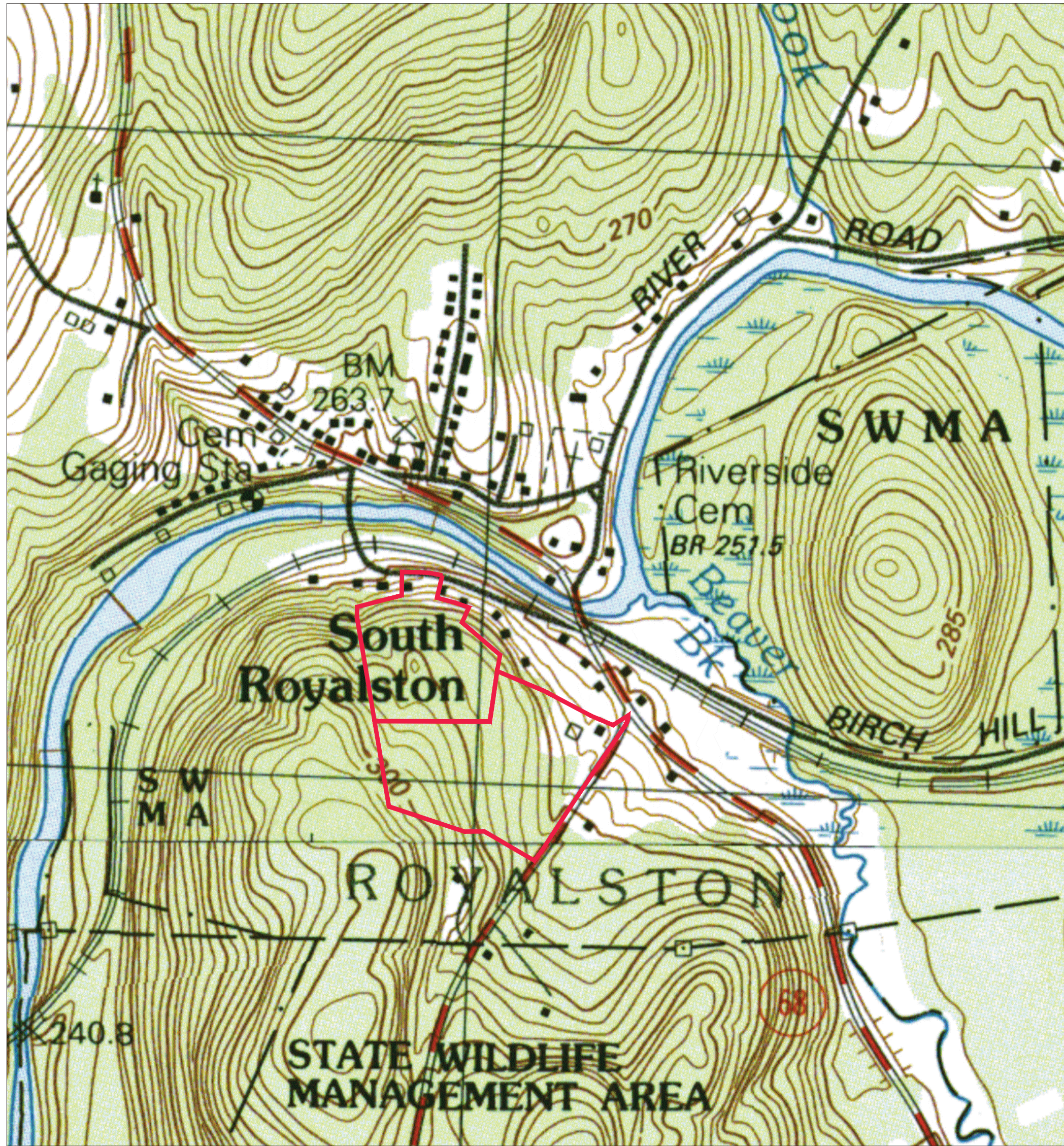
ROYALSTON SOLAR

CLEAN FOCUS RENEWABLES, INC.
363 CENTENNIAL PARKWAY, SUITE 105
LOUISVILLE, CO 80027

PERMITTING PLAN SET

DECEMBER 5, 2018

TOWN OF ROYALSTON, MASSACHUSETTS
4 KING STREET AND 4 BEL NEL ROAD



1 SITE LOCUS PLAN

LOCUS MAP SOURCE: MASSGIS DATA-USGS TOPOGRAPHIC QUADRANGLE IMAGES

SCALE IN FEET

0 250 500 1000



2 ORTHO-PHOTOGRAPH

BASE MAP SOURCE: MASSGIS DATA-USGS COLOR ORTHO IMAGERY (2013/ 2014)

SCALE IN FEET

0 125 250 500

SHEET INDEX

- 1.0: COVER
- 2.0: EXISTING CONDITIONS
- 3.0: EROSION CONTROL AND CLEARING PLAN - NORTH
- 3.1: EROSION CONTROL AND CLEARING PLAN - SOUTH
- 4.0: OVERALL SITE PLAN
- 4.1: SITE PLAN - NORTH
- 4.2 SITE PLAN - SOUTH
- 5.0: SITE DETAILS
- 5.1 SITE DETAILS

Prepared by:
SWCA
ENVIRONMENTAL CONSULTANTS
SWCA Environmental Consultants
15 Research Drive
Amherst, MA 01002
(p) 413.256.0202
(f) 413.256.1092
www.swca.com

Survey/ Base Plan Prepared By:
Northeast Survey Consultants
116 Pleasant Street, Suite 302
Easthampton, MA 01027
413-203-5144

Prepared for:
CLEAN FOCUS RENEWABLES, INC.
363 CENTENNIAL PARKWAY, SUITE 105
LOUISVILLE, CO 80027

Key Map:

FOR PERMITTING PURPOSES ONLY

Project Title:
ROYALSTON SOLAR
ROYALSTON, MA
4 KING STREET & 4 BEL NEL ROAD

Sheet Title:

COVER PAGE

Date:	12-05-2018
Scale:	As Shown
Drawn by:	PBG
Checked by:	KAM
File #	52251

REVISIONS		
REVISION	DATE	BY

Sheet No:

1.0



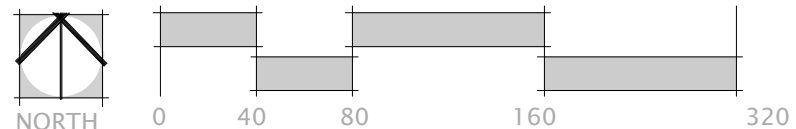
LEGEND

	PROPERTY LINE (±)	N/F	NOW OR FORMERLY
	ADJOINERS PROPERTY LINE (±)	○	IRON PIPE FOUND
	PROPERTY SETBACK (±)	⊕	UTILITY POLE
	TREELINE	+	GUY WIRE ANCHOR
	OVERHEAD WIRES	■	WETLAND FLAG
	CONTOUR LINE - 1' INTERVAL	■-■	WETLAND FLAG DELINEATOR
	CONTOUR LINE - 5' INTERVAL		
	EDGE OF WETLAND		
	WETLAND - 25' BUFFER		
	WETLAND - 100' BUFFER		

LEASED LAND AREA
= 14.62 ACRES

NOTES:

1. FIELD SURVEY BY RTK GPS & EDM TOTAL STATION IN OCT. 2018.
2. THE HORIZONTAL DATUM IS NAD83 AND VERTICAL DATUM IS NAVD88. BOTH WERE DERIVED FROM GPS OBSERVATIONS TAKEN ON SITE.
3. BOUNDARY LINES SHOWN HEREON ARE TAKEN FROM PLANS & DEEDS OF RECORD AND MONUMENTS FOUND. BOUNDARY LINES DEFINED BY THIS SURVEY ARE DIMENSIONED WITH BEARINGS & DISTANCES, ALL OTHERS ARE NOT DEFINED BY THIS SURVEY.
4. CONTOURS SHOWN HEREON WERE GENERATED IN ARCMAP FROM DIGITAL ELEVATION MODELS OF THE CMGP POST SANDY LIDAR DATA (15' GRID SIZE/TIN GRID METHOD) COLLECTED BY USGS IN 2013-2014 AND DISTRIBUTED BY NOAA.
5. ACCORDING TO FEDERAL EMERGENCY MANAGEMENT AGENCY MAPS, THE PROPOSED FACILITY IS LOCATED IN AREAS DESIGNATED AS ZONE C: "AREAS OF MINIMAL FLOODING". COMMUNITY PANEL NO. 25033 00019 B, EFFECTIVE DATE: 6/15/1983
6. THE LOCUS PROPERTY IS LOCATED IN THE TOWN OF ROYALSTON RESIDENTIAL AND RURAL & AGRICULTURAL ZONING DISTRICTS.
7. WETLANDS WERE DELINEATED BY SWCA IN OCT. 2018 AND LOCATED BY GPS.



Prepared by:
SWCA
ENVIRONMENTAL CONSULTANTS
SWCA Environmental Consultants
15 Research Drive
Amherst, MA 01002
(p) 413.256.0202
(f) 413.256.1092
www.swca.com

Survey/ Base Plan Prepared By:
Northeast Survey Consultants
116 Pleasant Street, Suite 302
Easthampton, MA 01027
413-203-5144

Prepared for:
CLEAN FOCUS RENEWABLES, INC.
383 CENTENNIAL PARKWAY, SUITE 105
LOUISVILLE, CO 80027

Key Map:



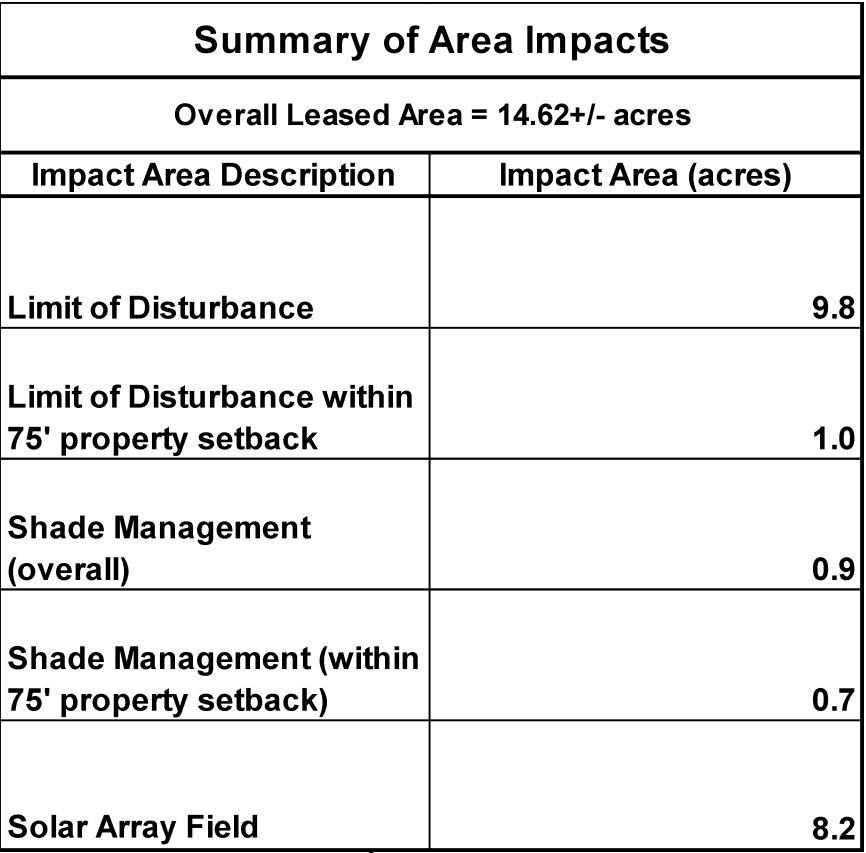
FOR PERMITTING PURPOSES ONLY
Project Title:
ROYALSTON SOLAR
ROYALSTON, MA
4 KING STREET & 4 BEL NEL ROAD

Sheet Title:
OVERALL EXISTING
CONDITIONS PLAN

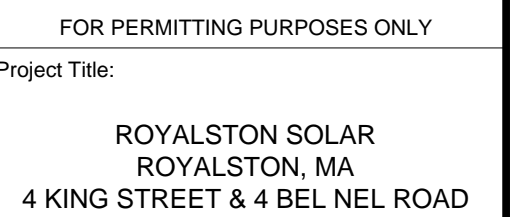
Date:	12-05-2018
Scale:	As Shown
Drawn by:	PBG
Checked by:	KAM
File #	52251

REVISIONS		
REVISION	DATE	BY

Sheet No:



Key Map:

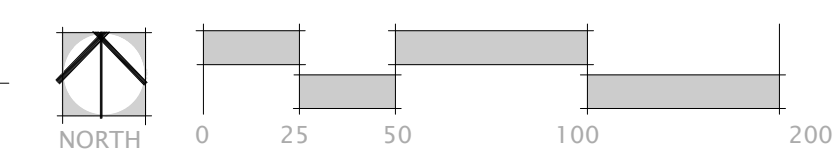


Date:	12-05-2018
Scale:	As Shown
Drawn by:	PBG
Checked by:	KAM
File #	52251

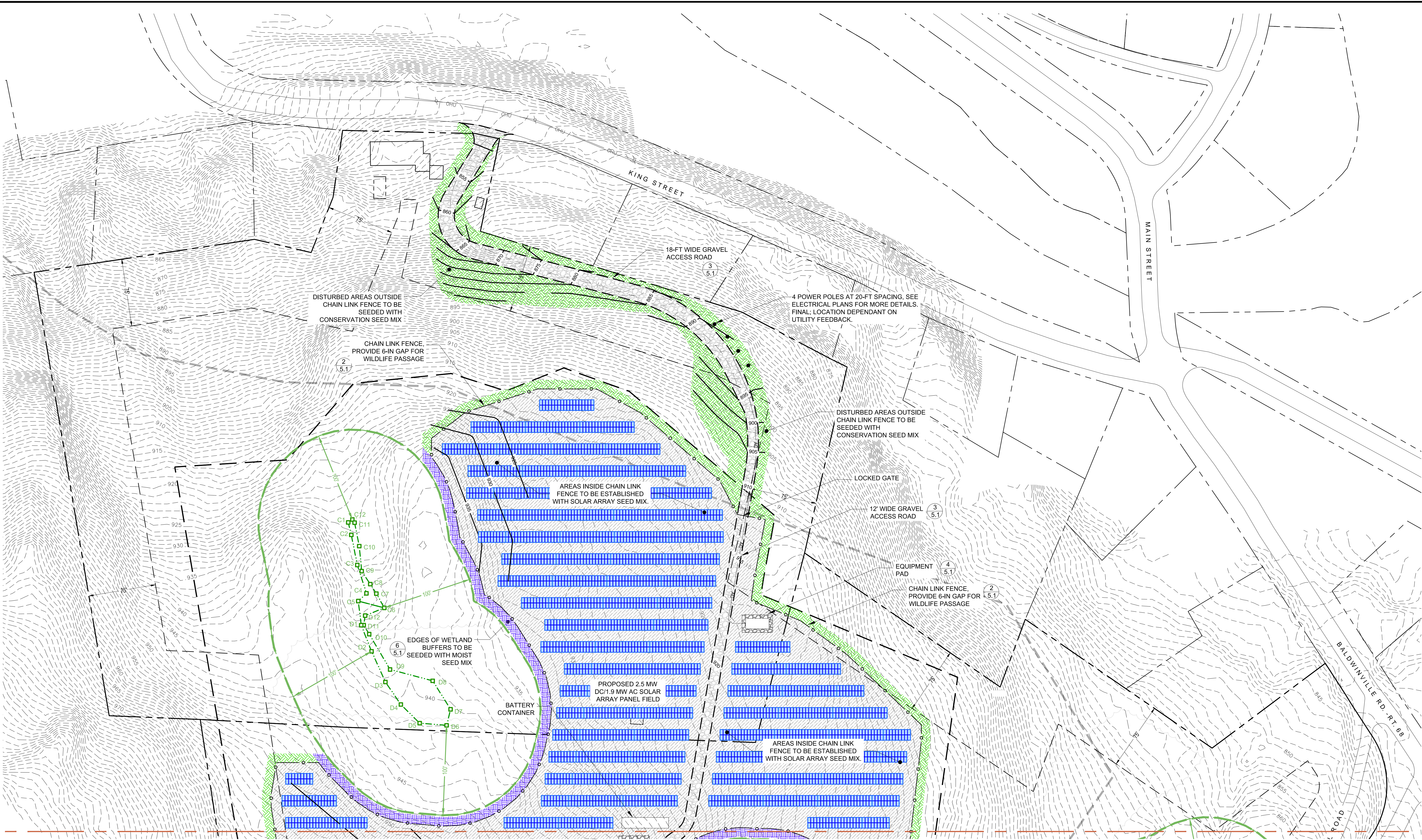
Sheet No:



REVISIONS		
REVISION	DATE	BY

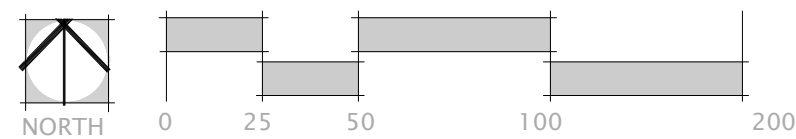






LEGEND	
	PROPERTY LINE (±)
	ADJOINERS PROPERTY LINE (±)
	PROPERTY SETBACK (±)
	TREELINE
	OVERHEAD WIRES
	CONTOUR LINE - 1' INTERVAL
	CONTOUR LINE - 5' INTERVAL
	EDGE OF WETLAND
	WETLAND - 25' BUFFER
	WETLAND - 100' BUFFER
	N/F NOW OR FORMERLY
	IRON PIPE FOUND
	UTILITY POLE
	GUY WIRE ANCHOR
	WETLAND FLAG
	WETLAND FLAG DELINEATOR
	CONSERVATION SEED MIX
	MOIST SEED MIX
	SOLAR ARRAY SEED MIX

1 SITE PLAN NORTH
Scale: 1"=50'



Prepared by:
SWCA
ENVIRONMENTAL CONSULTANTS
SWCA Environmental Consultants
15 Research Drive (p) 413.256.0202
Amherst, MA 01002 (f) 413.256.1092
www.swca.com

Survey/ Base Plan Prepared By:
Northeast Survey Consultants
116 Pleasant Street, Suite 302
Easthampton, MA 01027
413-203-5144

Prepared for:
CLEAN FOCUS RENEWABLES, INC.
383 CENTENNIAL PARKWAY, SUITE 105
LOUISVILLE, CO 80027

Key Map:



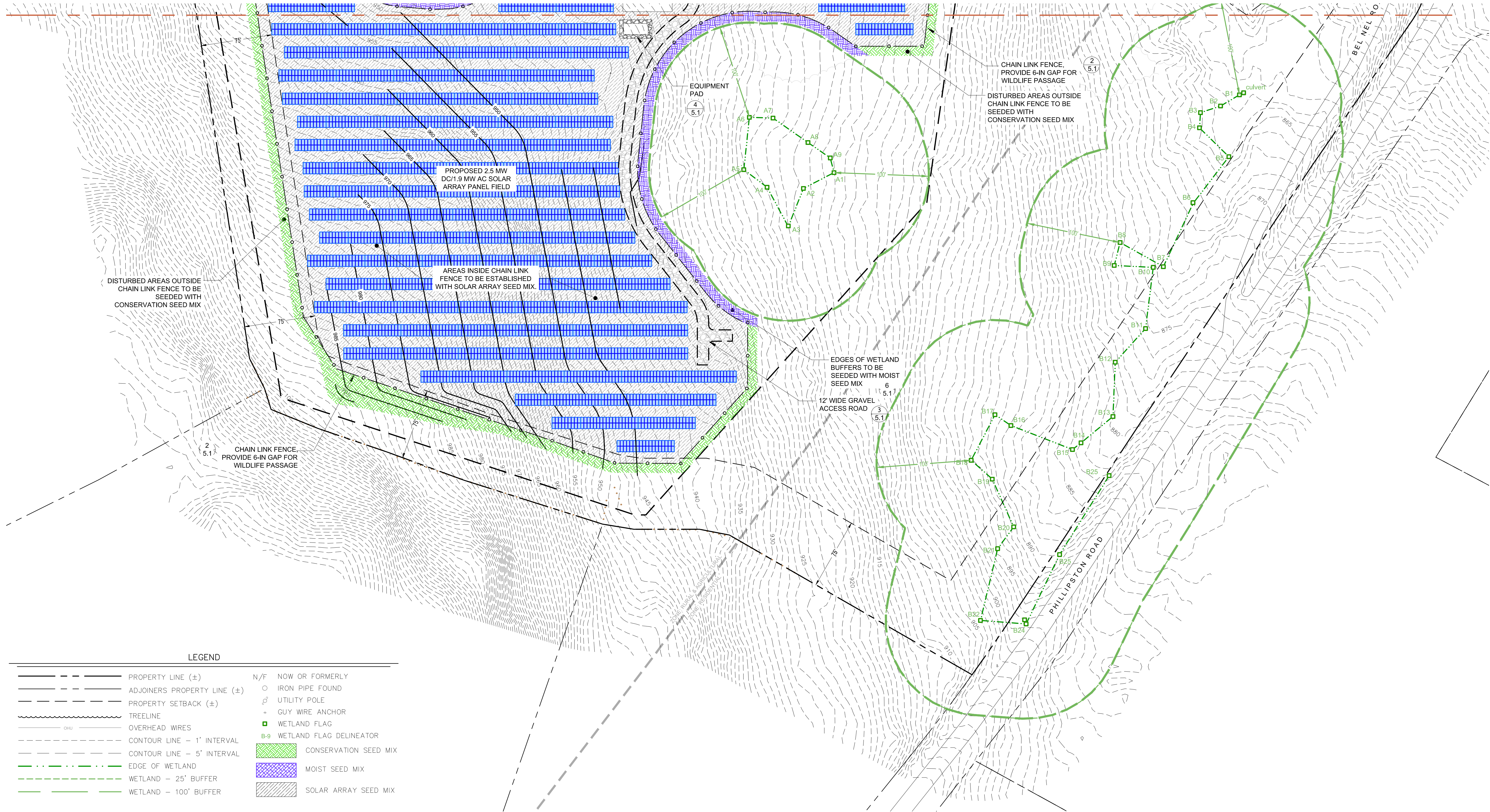
FOR PERMITTING PURPOSES ONLY
Project Title:
ROYALSTON SOLAR
ROYALSTON, MA
4 KING STREET & 4 BEL NEL ROAD

Sheet Title:
SITE PLAN
NORTH

Date:	12-05-2018
Scale:	As Shown
Drawn by:	PBG
Checked by:	KAM
File #	52251

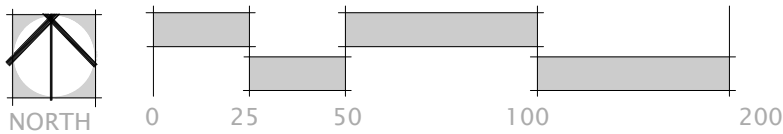
REVISIONS		
REVISION	DATE	BY

Sheet No:
4.1

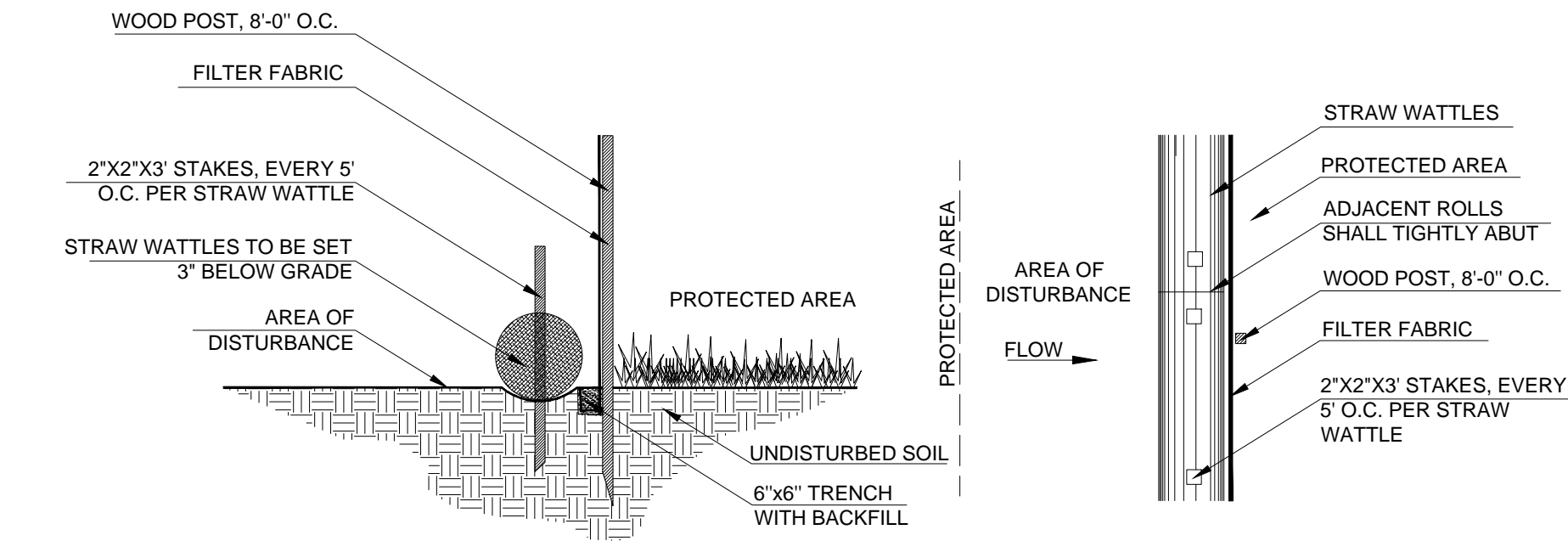


LEGEND

	PROPERTY LINE (±)	N/F	NOW OR FORMERLY
	ADJOINERS PROPERTY LINE (±)	○	IRON PIPE FOUND
	PROPERTY SETBACK (±)	⌘	UTILITY POLE
	TREELINE	+	GUY WIRE ANCHOR
	OVERHEAD WIRES	■	WETLAND FLAG
	CONTOUR LINE - 1' INTERVAL	■-9	WETLAND FLAG DELINEATOR
	CONTOUR LINE - 5' INTERVAL		CONSERVATION SEED MIX
	EDGE OF WETLAND		MOIST SEED MIX
	WETLAND - 25' BUFFER		SOLAR ARRAY SEED MIX
	WETLAND - 100' BUFFER		

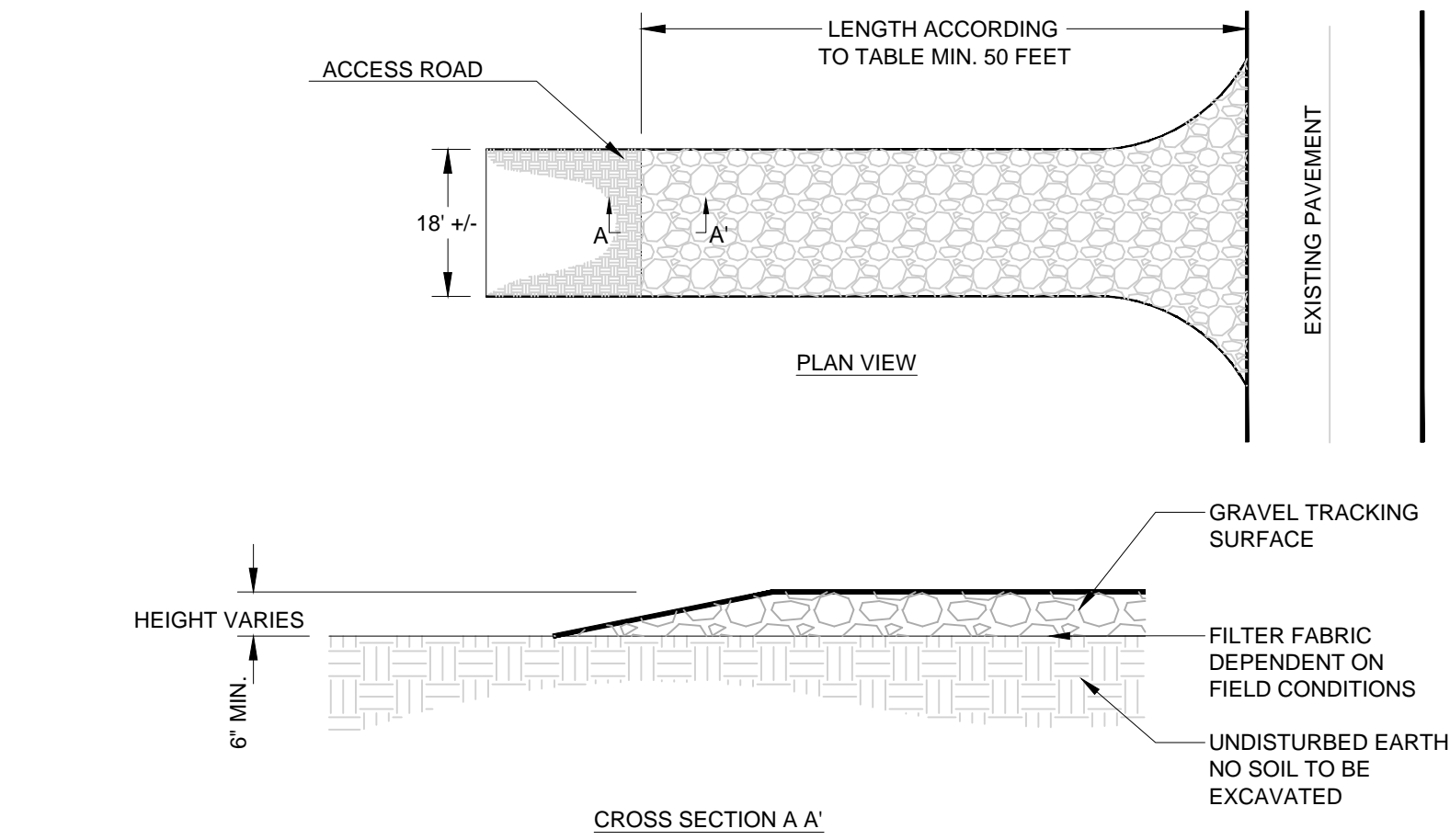


REVISIONS		
REVISION	DATE	BY



1 SILT FENCE-STRAW WATTLE COMBINATION/LIMIT OF WORK

Scale: NTS



PERCENT SLOPE OF ROADWAY	LENGTH OF ROAD REQUIRED	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 FT.	100 FT.
2 TO 5%	100 FT.	200 FT.
OVER 5%	ENTIRE SURFACE STABILIZED WITH FABC BASE COURSE (AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY)	

NOTES:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY OFF-ROAD STORAGE OR STAGING AREAS. THE CONTRACTOR SHALL PROVIDE A STABILIZED CONSTRUCTION ENTRANCE FOR EACH OFF-ROAD STORAGE AREA.
- STONE SIZE TO BE 2" TO 2-1/2" DIA.
- DEPTH OF GRAVEL TO BE BASED ON SOILS BUT BE A MINIMUM DEPTH OF 3"
- THE ABOVE-INDICATED STABILIZATION CONSTRUCTION ENTRANCE TO BE USED AT OFF-SITE STORAGE OR STAGING AREA, IF REQUIRED, AND OBTAINED BY THE CONTRACTOR.

2 STABILIZED CONSTRUCTION ENTRANCE

Scale: NTS

I. Erosion Control Plan

Erosion and sediment control methods for the site include structural and stabilization practices. Stabilization practices will be implemented to cover exposed soil so that discharge of sediment is minimized. Stabilization practices reduce the time soil is exposed to the elements therefore reducing the possibility of erosion. An adequate stockpile of erosion control materials will be maintained at the construction site in the event of an emergency or routine repairs.

Structural practices involve the construction of devices to divert and limit runoff. These practices limit the amount of stormwater entering a disturbed area or trap sediment prior to stormwater leaving a site. The following are the procedures to be followed:

- The site construction foreman shall be designated as the on-site individual who will be responsible for the daily maintenance of all sediment and erosion controls, and shall implement all measures necessary to control erosion and to prevent sediment from leaving the site.
- Prior to any site grading or site work, the contractor shall install all specified sediment and erosion controls, which will also serve as the limit of construction. The sediment controls will be as specified on the approved plans.
- Any work within 10' of wetland resource area is to have a double row of erosion control barrier. Erosion control type as shown on the plans to be field verified based on construction timing, phasing and site conditions.
- A construction exit shall be constructed to shed dirt from construction vehicle tires. The crushed stone pad will be replaced/cleaned as needed to maintain its effectiveness.
- Temporary sediment basins may be used as needed during construction. Sediment shall be removed from the basins on a as needed basis or when the sediment reaches a depth of more than 3".
- Construction debris and sediment shall be kept on site and shall not be permitted to migrate beyond the project boundaries.
- Once the site is stable, the sediment and erosion controls may be removed under the direction of the erosion control specialist.

II. Other Controls

The following additional controls shall be implemented during construction in order to minimize erosion and runoff from the project location:

- No chemicals (cement, mortar, etc.) shall be mixed or poured within any wetlands or buffer zone
- Solid waste will be collected and stored in a secure dumpster. The dumpster shall meet all local and state solid waste management regulations.
- Construction debris may include lumber, concrete, steel, or other debris and site materials requiring removal. This materials will be disposed of according to state and federal law and will not be disposed of on site. Excess soil generated from this site requires characterization prior to removal. Rather than export material, it is preferred that minor excavations are reused on site as backfill in teh same general area it originated.
- The limits of all grading and disturbance shall be kept to a minimum within the proposed area of construction. All areas outside the limits of disturbance shall remain undisturbed.
- Continuous lines of erosion controls shall enclose the work area and serve as the limit of work.
- All erosion and sediment control measures shall be maintained or replaced as required to assure proper function.
- All breaches or failures in sediment controls shall be immediately repaired or replaced.
- Debris and litter, which accumulates along the construction area, shall be removed daily.
- Sediment build-up behind any silt fences or erosion control barriers will be monitored and removed whenever sediment has accumulated to 6-inches in depth.
- Other controls will be implemented, as deemed necessary by the contractor, during the construction of the project.
- If conditions warrant, additional de-watering controls may be needed such as dirt bags, frac tanks or other measures.

III. Phasing and General Construction Sequence

In order to further minimize sediment loss on the site, a general construction sequence plan has been developed. Prior to conducting work associated with this project, the contractor shall be required to obtain all copies of permit applications and approvals that outline conditions governing the proposed work. The contractor will also review the drawings prepared for the project. The contractor will then follow the general sequence of work as outlined below:

- The contractor will place all erosion and sedimentation control systems in accordance with the drawings, or as may be dictated by site conditions, in order to maintain the intent of the specifications and permits. Deficiencies or changes on the drawings shall be corrected or implemented as site conditions change. Changes during construction shall be noted and posted on the drawings (Site Plans).
- The intent is to direct all water from disturbed areas through sedimentation controls prior to leaving construction boundaries. There shall be no discharge of untreated construction runoff from this site.
- The contractor shall maintain temporary erosion and sedimentation control systems as dictated by site conditions, indicated in the construction documents, or as directed by governing authorities or owner to control sediment until final stabilization.
- The contractor shall respond to any maintenance or additional work ordered by owner or governing authorities immediately if required and always within 7 days.
- The contractor shall incorporate permanent erosion control features, permanent slope stabilization, and vegetation into the project plans at the earliest practical time to minimize the need for temporary controls.
- Tree and vegetation clearing and any rough grading shall only occur if the disturbed soil surface can be stabilized within 48 hours of clearing. Tree and vegetation clearing shall be scheduled in conjunction with weather forecast such that no more than 1/4" of rain is to be expected within 48 hours of any clearing or grading activity.
- Any area disturbed within the limit of work, but not within the limits of the solar array footprint are to be seeded with New England Conservation/ Wildlife Seedmix unless specified otherwise in the plan set.
- The contractor shall stabilize all disturbed areas within 48 hours after final grading. In the event that it is not practical to seed areas, slopes must be stabilized with geotextile fabric or other means to reduce the erosive potential of the area.

OPERATION AND MAINTENANCE PLAN

On-going access road O&M plan

- Access road may be repaired as needed to maintain access to solar facility.
- Vegetation in the access road may periodically be mown following the restrictions outlined under the vegetation maintenance plan below.

Solar Energy Equipment O&M plan

- Periodic inspections of the perimeter fences, solar array, and connecting infrastructure will be made by the maintenance contractor.
- The fence panels are to be raised approximately 6" off of the ground, to permit movement of ground dwelling animals.
- Repairs to the fence shall be made as needed.
- Repairs to solar energy collecting and distribution equipment shall be made as needed.
- Repairs to or replacement of utility poles shall be made as needed.

Vegetation Maintenance plan

- Vegetation within the solar array, under and around the energy collecting panels and inside the perimeter fence, a strip of vegetation immediately outside of the fence limit, and any other location throughout the site, shall be mown annually as specified on Sheet 5.1.
- Shade management by selective tree cutting shall be performed as needed.

Prepared by:

SWCA
ENVIRONMENTAL CONSULTANTS

SWCA Environmental Consultants

15 Research Drive
Amherst, MA 01002
(p) 413.256.0202
(f) 413.256.1092
www.swca.com

Survey/ Base Plan Prepared By:

Northeast Survey Consultants
116 Pleasant Street, Suite 302
Easthampton, MA 01027
413-203-5144

Prepared for:

CLEAN FOCUS RENEWABLES, INC.
363 CENTENNIAL PARKWAY, SUITE 105
LOUISVILLE, CO 80027

Key Map:



FOR PERMITTING PURPOSES ONLY

Project Title:

ROYALSTON SOLAR
ROYALSTON, MA
4 KING STREET & 4 BEL NEL ROAD

Sheet Title:

SITE DETAILS

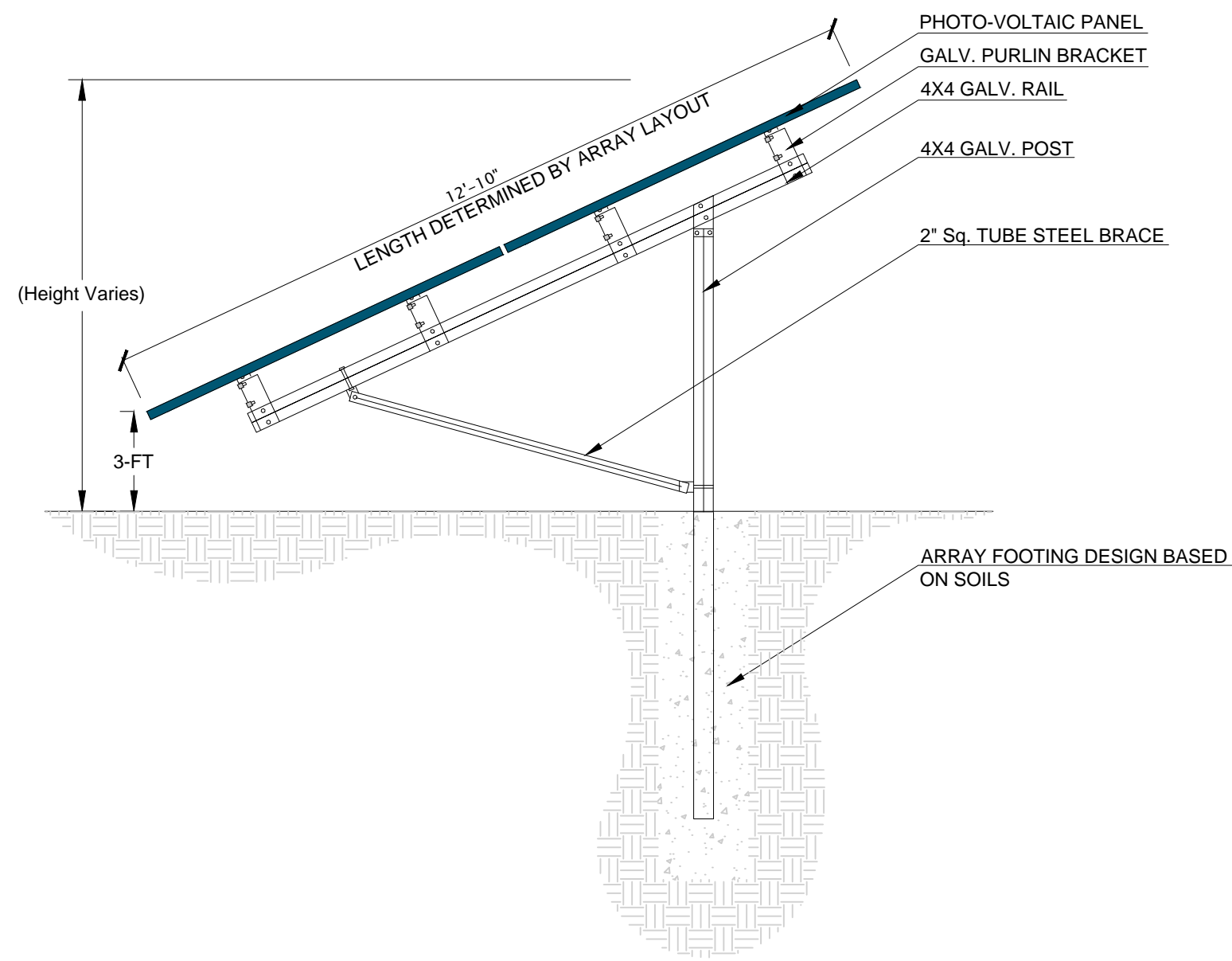
Date: 12-05-2018
Scale: As Shown
Drawn by: PBG
Checked by: KAM
File #: 52251

REVISIONS

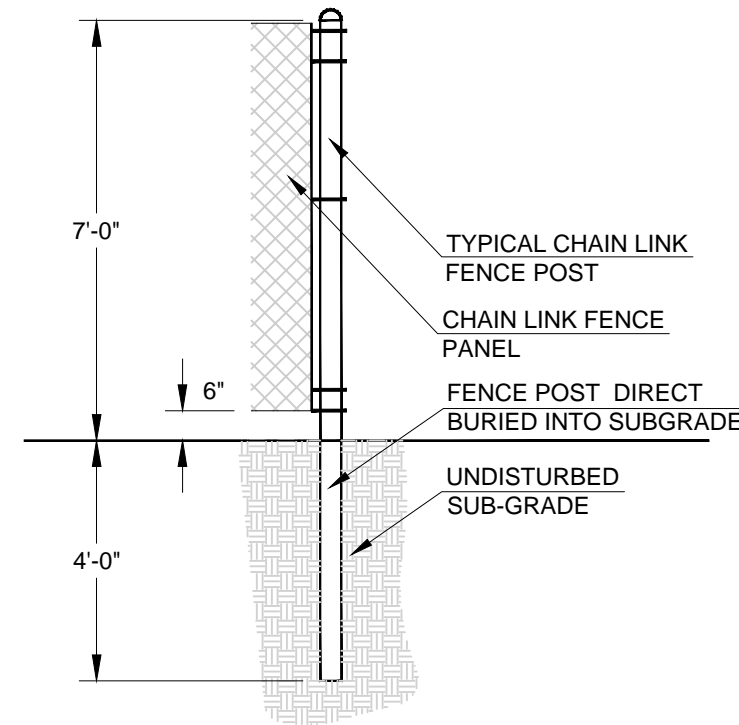
REVISION	DATE	BY

Sheet No:

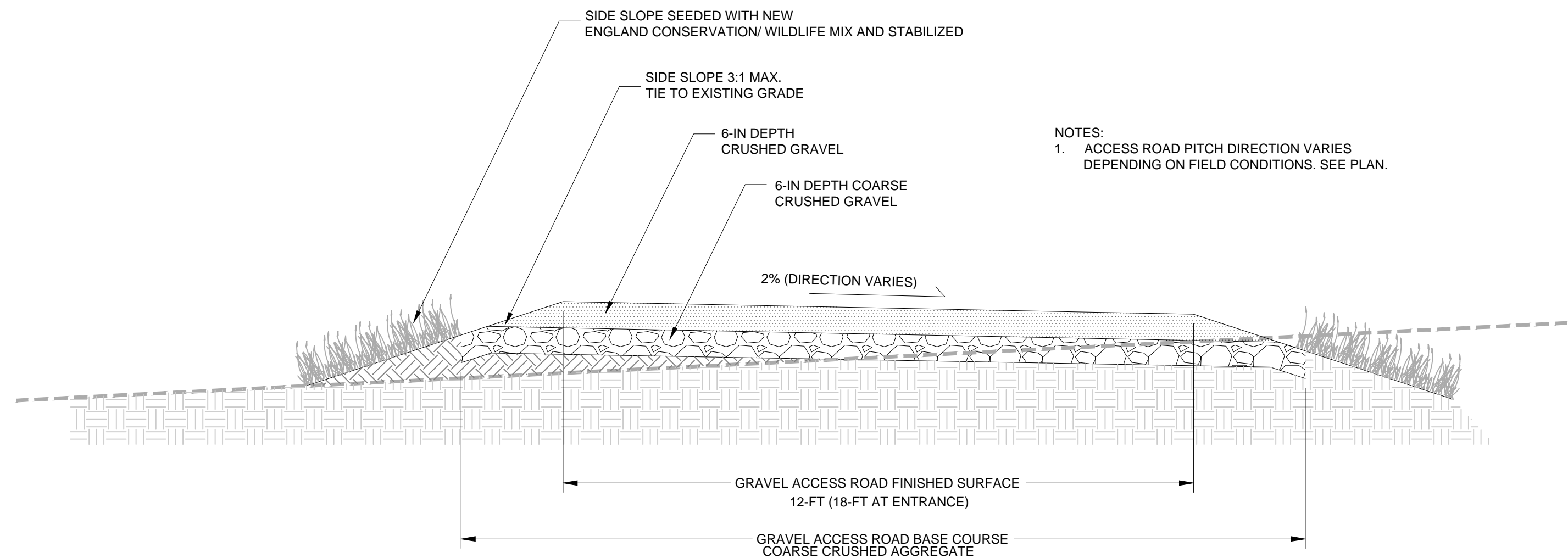
5.0



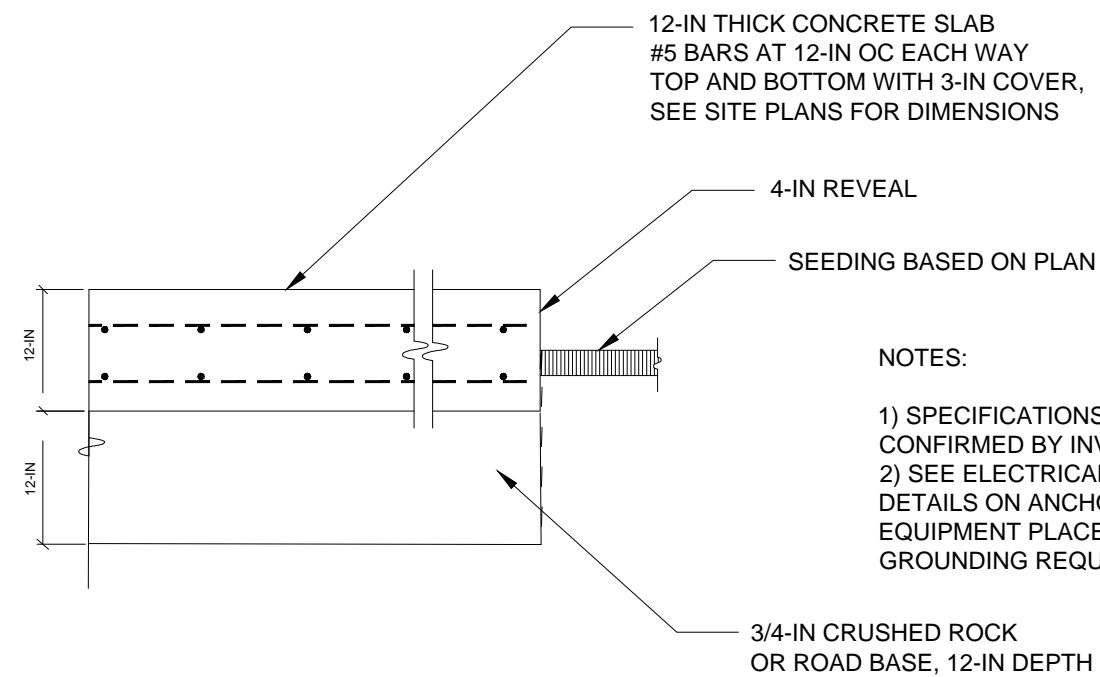
1 SOLAR RACKING (TYPICAL)
Scale: NTS



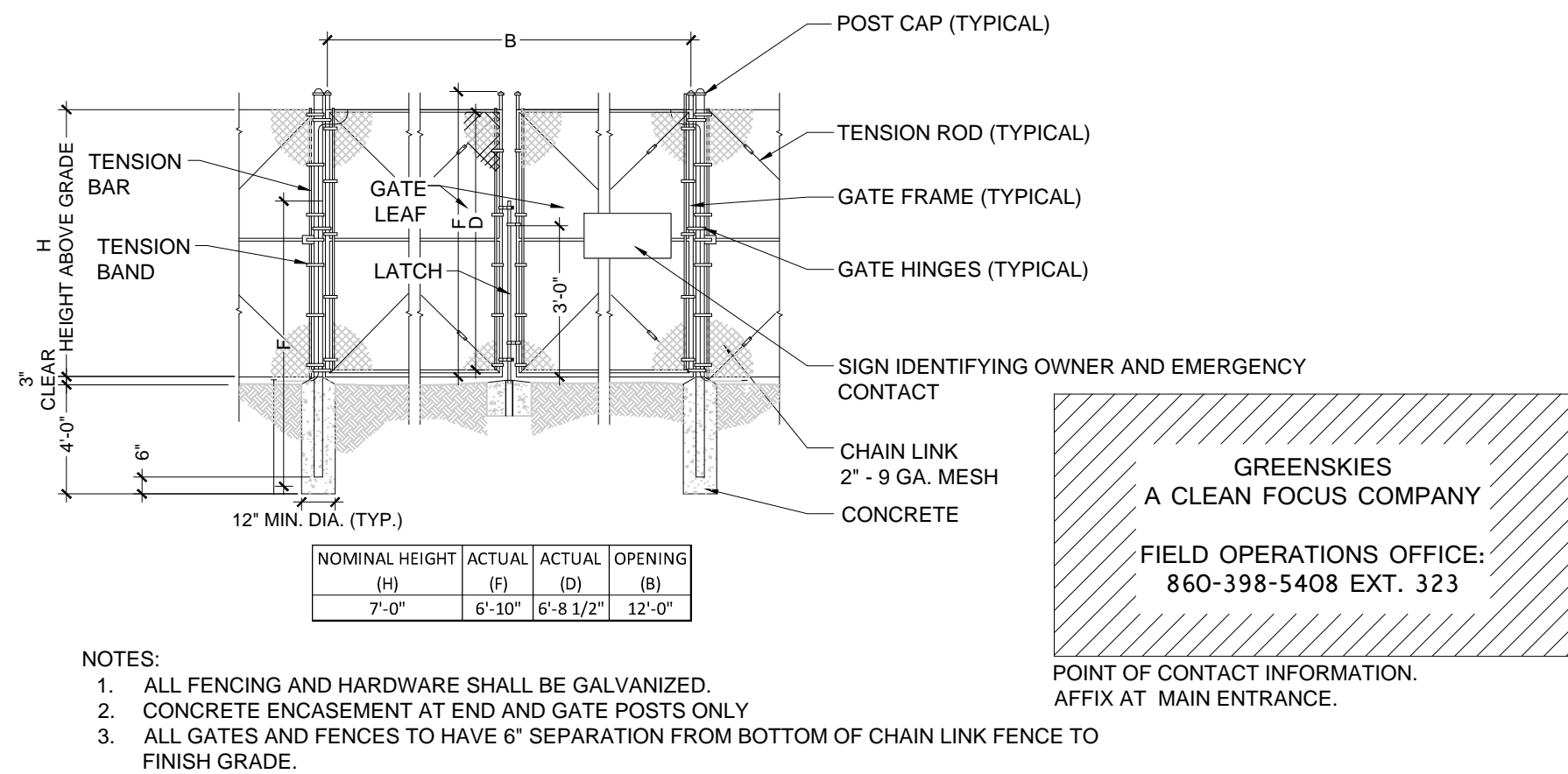
2 SECURITY FENCE
Scale: NTS



3 ACCESS ROAD
Scale: 1/2"=1'



4 EQUIPMENT PAD
Scale: NTS



5 CHAIN LINK SECURITY FENCE- DOUBLE GATE
Scale: NTS

SOLAR ARRAY SEED MIX	
SPECIES	Per Bulk Pound (lb)
Sheep Fescue	.25
Little Bluestem 'Camper'	.2
Broomsedge	.12
Annual Ryegrass	.15
Lanceleaf Coreopsis	.08
Plains Coreopsis	.08
Blackeyed Susan	.05
Common Yarrow	.05
Butterfly Milkweed	.05
TOTAL	1lb

6 SOLAR ARRAY SEED MIX

NEW ENGLAND CONSERVATION / WILDLIFE SEED MIX 1LB/ 1500 SQ.FT.	
SPECIES	PERCENT
Big Bluestem (Andropogon gerardii)	20
Little Bluestem (Schizachyrium scoparium)	20
Switchgrass (Panicum virgatum)	20
Fox Sedge (Carex vulpinoidea)	10
Silky Wild Rye (Elymus villosus)	8
Common Milkweed (Asclepias syriaca)	5
Deertongue (Panicum clandestinum)	5
Pennsylvania Smartweed (Polygonum pensylvanicum)	5
Partridge Pea (Chamaecrista fasciculata)	4
Silky Smooth Aster (Aster laevis)	1.5
Nodding Bur-Marigold (Bidens cernua)	1
Flat-top Aster (Aster umbellatus)	0.5
TOTAL	100

7 CONSERVATION SEED MIX

NEW ENGLAND MOIST MIX 1LB/ 1500 SQ.FT.	
SPECIES	PERCENT
Upland Bentgrass (Agrostis perennans)	32
Creeping Bentgrass (Agrostis stolonifera)	16
Big Bluestem (Andropogon gerardii)	15
Fox Sedge (Carex vulpinoidea)	10
Canada Wild Rye (Elymus canadensis)	7.5
Virginia Wild Rye (Elymus virginicus)	7
Creeping Red Fescue (Festuca rubra)	5.5
Soft Rush (Juncus effusus)	2
Switchgrass (Panicum virgatum)	1
Little Bluestem (Schizachyrium scoparium)	1
Green Bulrush (Scirpus atrovirens)	1
New England Aster (Aster novae-angliae)	1
Spotted Joe-Pye Weed (Eupatorium maculatum)	0.5
Blue Vervain (Verbena hastata)	0.5
TOTAL	100

8 MOIST SEED MIX



REVISIONS		
REVISION	DATE	BY