

SOLAR FARM
60 Winchendon Road
Royalston, MA

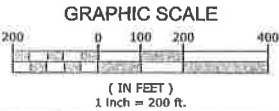
Index of Sheets

1	Cover / Locus Sheet
2	Existing Conditions Index
3-5	Existing Conditions Plan
6	Grading & Layout Index
7-9	Grading & Layout Plan
10-11	Driveway Plan & Profile
12	Construction Details
13-16	Sedimentation & Erosion Control Plans



Locus Plan - 1"=200'

Prepared for:
Energy Development Group, LLC
April 19, 2018



COVER SHEET

for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
Energy Development Group, LLC
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 500'



Norman G. Hill DATE: 4-18-18
NORMAN G. HILL, PLS #41786



Norman G. Hill DATE: 4-18-18
NORMAN G. HILL, PE #31887

REVISIONS			
No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			
Field By:		BDH	1/18
Designed By:		MHG	4/18
Drawn By:		MHG	4/18
Checked By:		NGH	4/18



Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

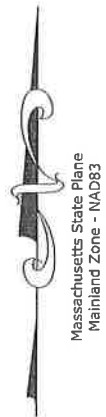
Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

Date	April 19, 2018	Sheet No.	1
Job No.	G9121		



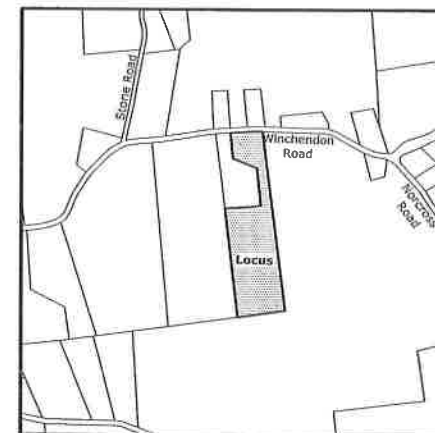
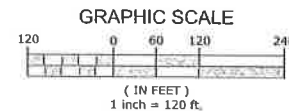
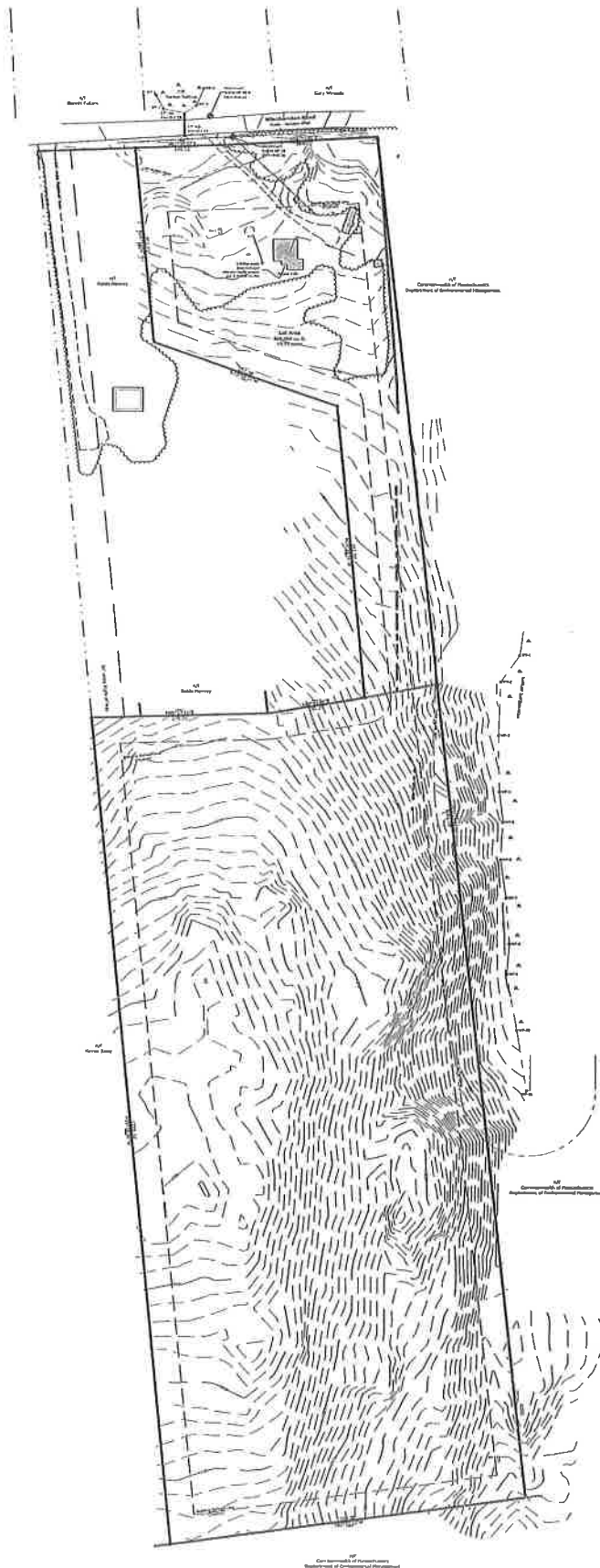
Elevations refer to NAVD 88

Soil Logs			
DH-1			
Depth	Horizon	Texture	Color
0-8"	A	Sandy Loam	7.5YR 3/2
8"-20"	B	Sandy Loam	7.5YR 5/3
20"-84"	C	Sandy Loam	7.5YR 5/4
Mottles @ 10"			
Water seeping @ 12"			
DH-2			
Depth	Horizon	Texture	Color
0-8"	A	Sandy Loam	7.5YR 3/2
8"-24"	B	Sandy Loam	7.5YR 5/3
24"-48"	C	Sandy Loam	7.5YR 5/4
Mottles @ 47"			

Zoning Summary

Zone: RRA		
	Required	Proposed
Frontage:	300 ft	372.28 ft
Area:	3 acres	19.95 acres
Front Yard:	100 ft	939.1 ft*
Side Yard:	40 ft	42.9 ft*
Rear Yard:	40 ft	79.8 ft*

* No new building is proposed; dimensions reflect PV array to property line.



LOCUS PLAN
Scale: 1" = 500'

References

Deed: Book 58337 Page 204

Plans: Plan Book 676 Plan 52

Assessors: Map 11 Block 77 Parcel 0
Map 16 Parcel 18

Datum: Horizontal - NAD83, Mass. State Plane, Mainland Zone
Vertical - NAVD 88

Applicant

Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645

Owner

Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645

EXISTING CONDITIONS PLAN

for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
**Energy Development
Group, LLC**
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 120'

Legend

	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence



Norman G. Hill DATE: 4-19-18
NORMAN G. HILL, PE #31887

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By:	BDH	1/18
Designed By:	MHG	4/18
Drawn By:	MHG	4/18
Checked By:	NGH	4/18



Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

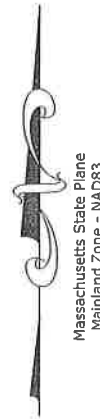
www.landplanninginc.com

Date
April 19, 2018

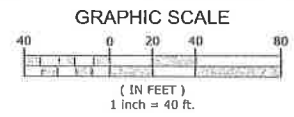
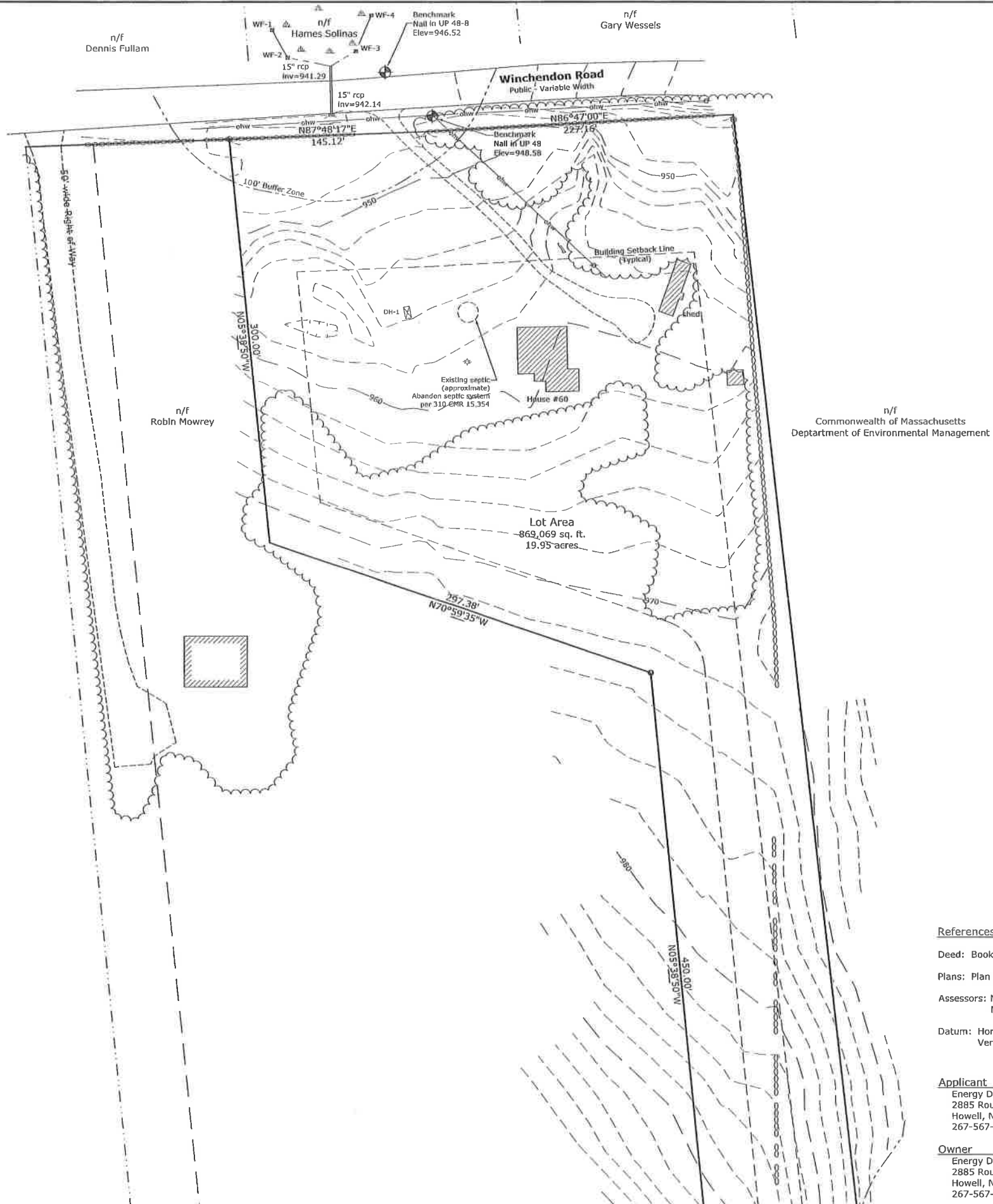
Job No.
G9121

Sheet No.

2



Elevations refer to NAVD 88



**EXISTING
CONDITIONS PLAN**
for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
**Energy Development
Group, LLC**
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend

- Drop Inlet
- Flared End
- Proposed Contour
- Proposed Spot Grade
- Existing Contour
- Utility Pole
- Water Gate Valve
- Hydrant
- Underground Electric
- Proposed Fence



Norman G. Hill DATE: 4-19-18
NORMAN G. HILL, PE #31887

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			
Field By:		BDH	1/18
Designed By:		MHG	4/18
Drawn By:		MHG	4/18
Checked By:		NGH	4/18



Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

Date	April 19, 2018	Sheet No.	3
Job No.	G9121		

References

Deed: Book 58337 Page 204
Plans: Plan Book 676 Plan 52
Assessors: Map 11 Block 77 Parcel 0
Map 16 Parcel 18
Datum: Horizontal - NAD83, Mass. State Plane, Mainland Zone
Vertical - NAVD 88

Applicant

Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645

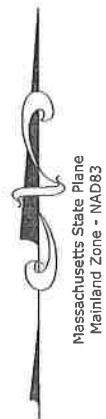
Owner

Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645

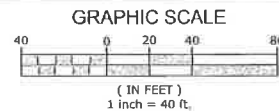
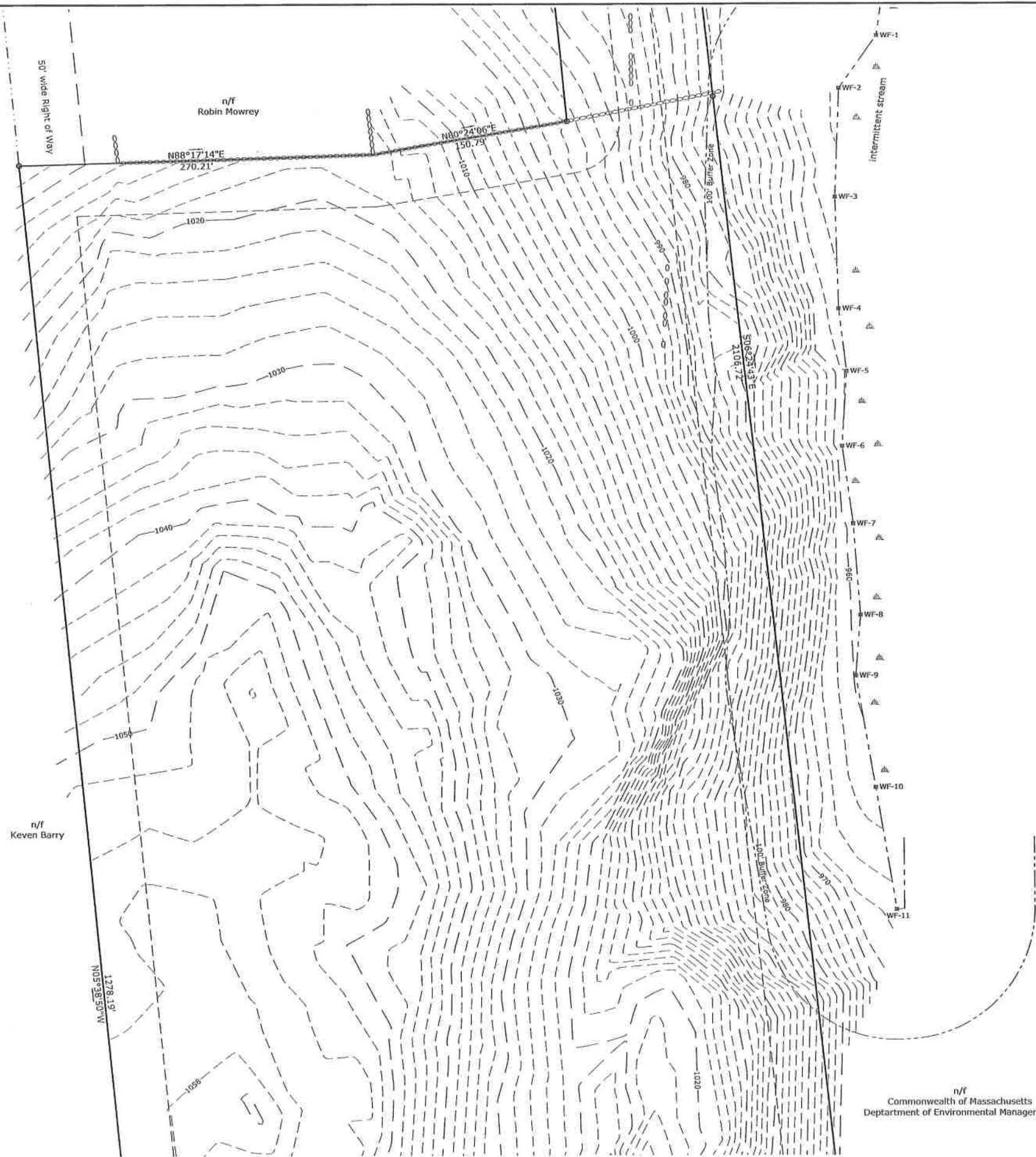
Soil Logs

Depth	Horizon	Texture	Color
0'-8"	A	Sandy Loam	7.5YR 3/2
8"-20"	B	Sandy Loam	7.5YR 5/3
20"-84"	C	Sandy Loam	7.5YR 5/4
Mottles @ 10"			
Water seeping @ 12"			

Depth	Horizon	Texture	Color
0'-8"	A	Sandy Loam	7.5YR 3/2
8"-24"	B	Sandy Loam	7.5YR 5/3
24"-48"	C	Sandy Loam	7.5YR 5/4
Mottles @ 47"			



Elevations refer to NAVD 88



EXISTING CONDITIONS PLAN for Solar Farm Located at 60 Winchendon Road Royalston, MA

Prepared for & Owned by
**Energy Development
Group, LLC**
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend

- Drop Inlet
- Flared End
- Proposed Contour
- 100.0 x
- Existing Contour
- Utility Pole
- Water Gate Valve
- Hydrant
- Underground Electric
- Proposed Fence



Norman G. Hill DATE: 4-19-18
NORMAN G. HILL, PE #31887

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By:	BDH	1/18
Designed By:	MHG	4/18
Drawn By:	MHG	4/18
Checked By:	NGH	4/18



Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

Date	April 19, 2018	Sheet No.	4
Job No.	G9121		

References

Deed: Book 58337 Page 204

Plans: Plan Book 676 Plan 52

Assessors: Map 11 Block 77 Parcel 0
Map 16 Parcel 18

Datum: Horizontal - NAD83, Mass. State Plane, Mainland Zone
Vertical - NAVD 88

Applicant

Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645

Owner

Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645

n/f
Commonwealth of Massachusetts
Department of Environmental Management

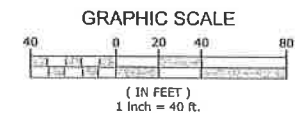


n/f
Keven Barry

Elevations refer to NAVD 88



n/f
Commonwealth of Massachusetts
Department of Environmental Management



EXISTING CONDITIONS PLAN for Solar Farm Located at 60 Winchendon Road Royalston, MA

Prepared for & Owned by
**Energy Development
Group, LLC**
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend

	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence



Norman G. Hill DATE: 4-19-18
NORMAN G. HILL, PE #31887

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By:	BDH	1/18
Designed By:	MHG	4/18
Drawn By:	MHG	4/18
Checked By:	NGH	4/18



Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

Date
April 19, 2018
Job No.
G9121

Sheet No.
5

Depth	Horizon	Texture	Color
0-8"	A	Sandy Loam	7.5YR 3/2
8"-20"	B	Sandy Loam	7.5YR 5/3
20"-84"	C	Sandy Loam	7.5YR 5/4
Mottles @ 10"			
Water seeping @ 12"			
Depth	Horizon	Texture	Color
0-8"	A	Sandy Loam	7.5YR 3/2
8"-24"	B	Sandy Loam	7.5YR 5/3
24"-48"	C	Sandy Loam	7.5YR 5/4
Mottles @ 47"			

References

Deed: Book 58337 Page 204

Plans: Plan Book 676 Plan 52

Assessors: Map 11 Block 77 Parcel 0
Map 16 Parcel 18

Datum: Horizontal - NAD83, Mass. State Plane, Mainland Zone
Vertical - NAVD 88

Applicant

Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645

Owner

Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645



Elevations refer to NAVD 88

Soil Logs

DH-1			
Depth	Horizon	Texture	Color
0'-8"	A	Sandy Loam	7.5YR 3/2
8"-20"	B	Sandy Loam	7.5YR 5/3
20"-84"	C	Sandy Loam	7.5YR 5/4
Mottles @ 10"			
Water seeping @ 12"			

DH-3			
Depth	Horizon	Texture	Color
0'-8"	A	Sandy Loam	7.5YR 3/2
8"-24"	B	Sandy Loam	7.5YR 5/3
24"-48"	C	Sandy Loam	7.5YR 5/4
Mottles @ 47"			

Zoning Summary

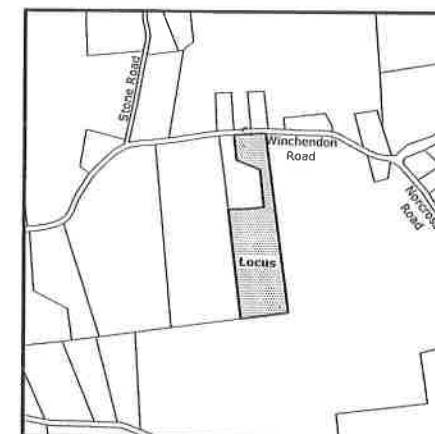
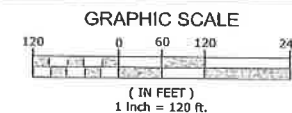
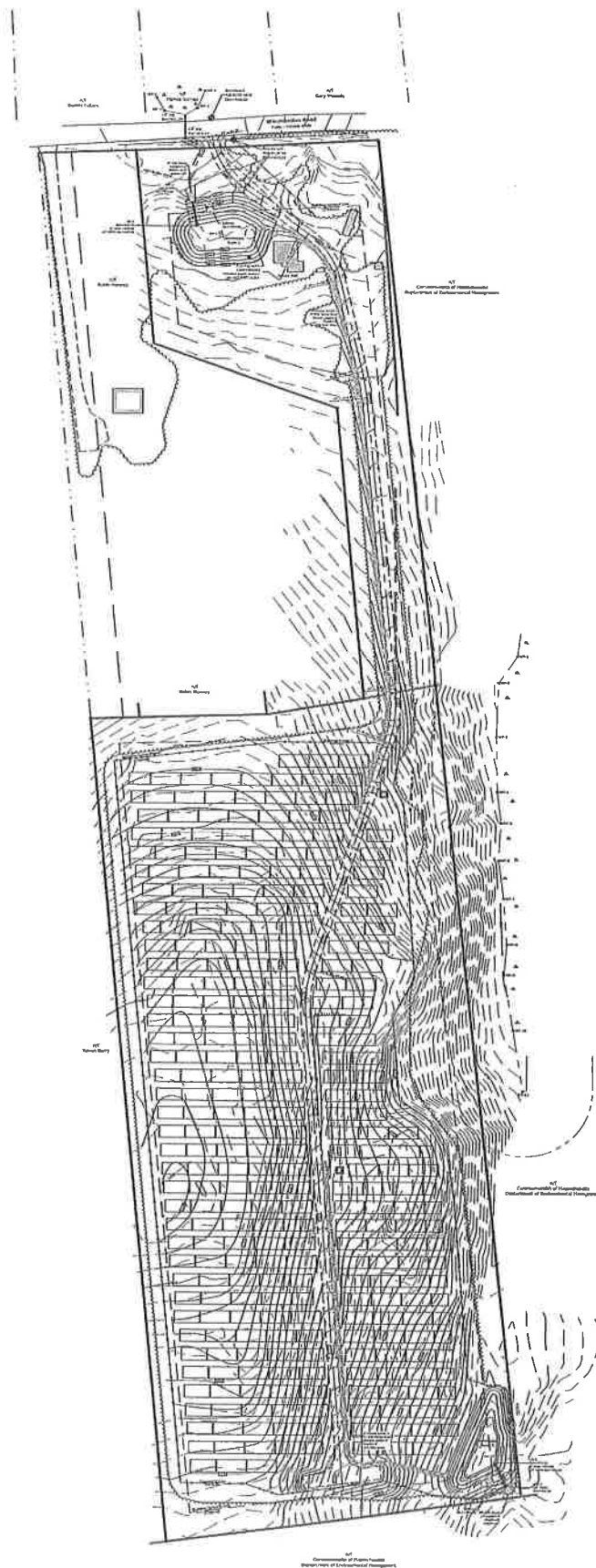
Zone: RRA

	Required	Proposed
Frontage:	300 ft	372.28 ft
Area:	3 acres	19.95 acres
Front Yard:	100 ft	939.1 ft*
Side Yard:	40 ft	42.9 ft*
Rear Yard:	40 ft	79.8 ft*

* No new building is proposed; dimensions reflect PV array to property line.

General Notes

- Place 4" L-80 and seal all disturbed areas of the project not otherwise improved.
- All underground utility locations shown are based on field evidence and records provided to Land Planning, Inc.. These locations should be considered approximate. Other utilities may exist which are not evident or for which record information was not found. The contractor must contact all utility companies and "Dig Safe" before excavation begins. We assume no responsibility for damages caused as a result of utilities omitted or inaccurately shown.
- It is the responsibility of the contractor to review all of the drawings and specifications associated with this project work and project scope prior to the initiation of construction. Should the contractor find a conflict with the documents, relative to the specifications or applicable codes, it is the contractor's responsibility to notify the project engineer of record in writing prior to the start of construction. Failure by the contractor to notify the project engineer shall constitute acceptance of full responsibility by the contractor to complete the scope of work as defined by the drawings and in full conformance with local regulations and codes.
- All work shall conform to Town of Royalston requirements and Massachusetts Highway Department construction standards as applicable.



LOCUS PLAN
Scale: 1" = 500'

LAYOUT & GRADING PLAN for Solar Farm Located at 60 Winchendon Road Royalston, MA

Prepared for & Owned by
**Energy Development
Group, LLC**
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 120'

Legend

	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence



DATE: 4-19-18
NORMAN G. HILL, PE #31887

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By:	BDH	1/18
Designed By:	MHG	4/18
Drawn By:	MHG	4/18
Checked By:	NGH	4/18



Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

Date
April 19, 2018
Job No.
G9121

Sheet No.
6

References

Deed: Book 58337 Page 204

Plans: Plan Book 676 Plan 52

Assessors: Map 11 Block 77 Parcel 0
Map 16 Parcel 18

Datum: Horizontal - NAD83, Mass. State Plane, Mainland Zone
Vertical - NAVD 88

Applicant

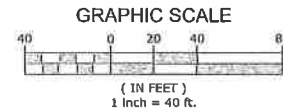
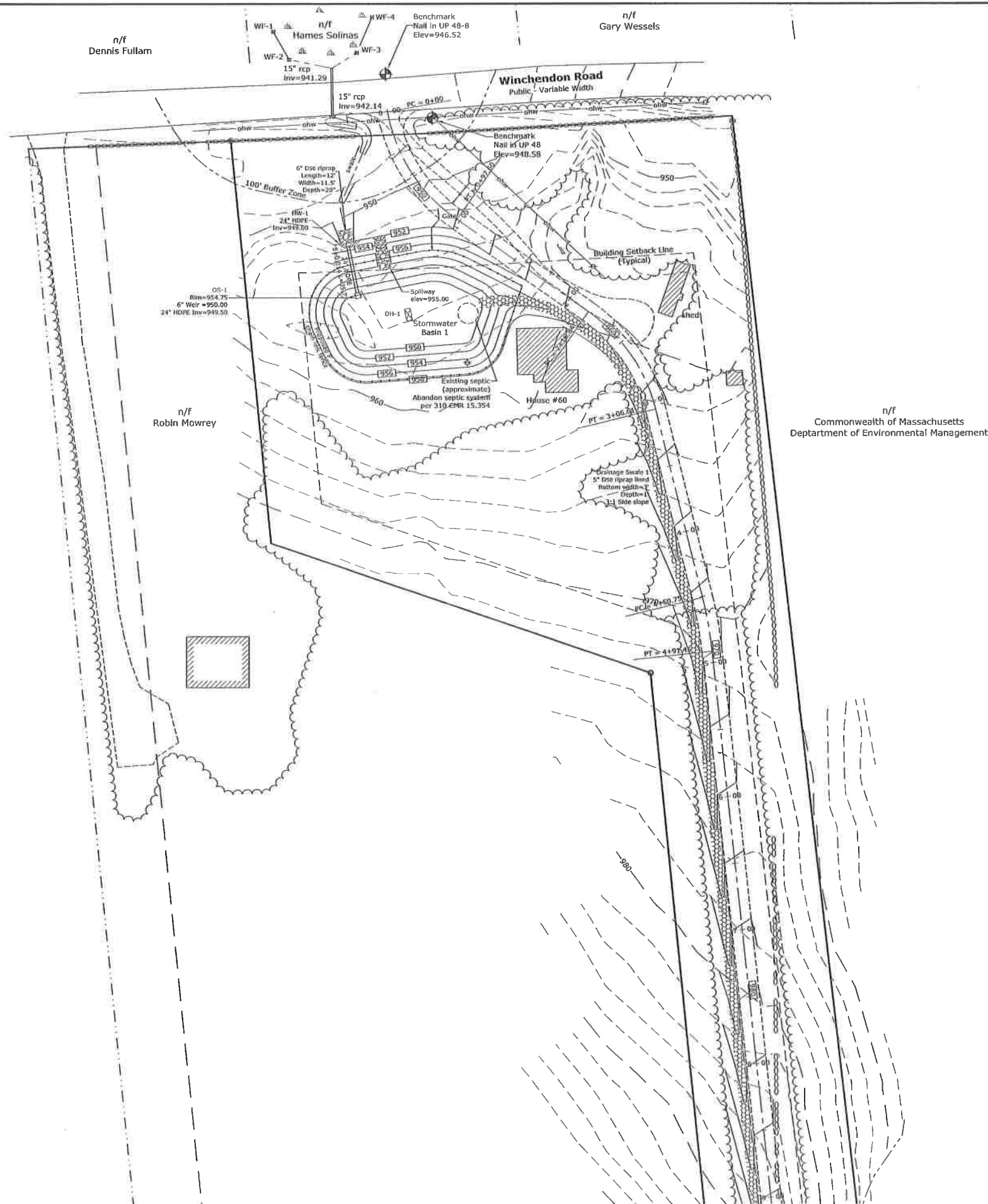
Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645

Owner

Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645



Elevations refer to NAVD 88



LAYOUT & GRADING PLAN
for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
Energy Development Group, LLC
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend	
	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence

DATE: 4-23-18

NORMAN G. HILL, PE #31887

REVISIONS			
No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By:	BDH	1/18
Designed By:	MHG	4/18
Drawn By:	MHG	4/18
Checked By:	NGH	4/18

Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

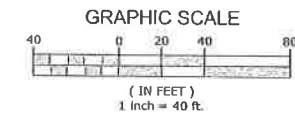
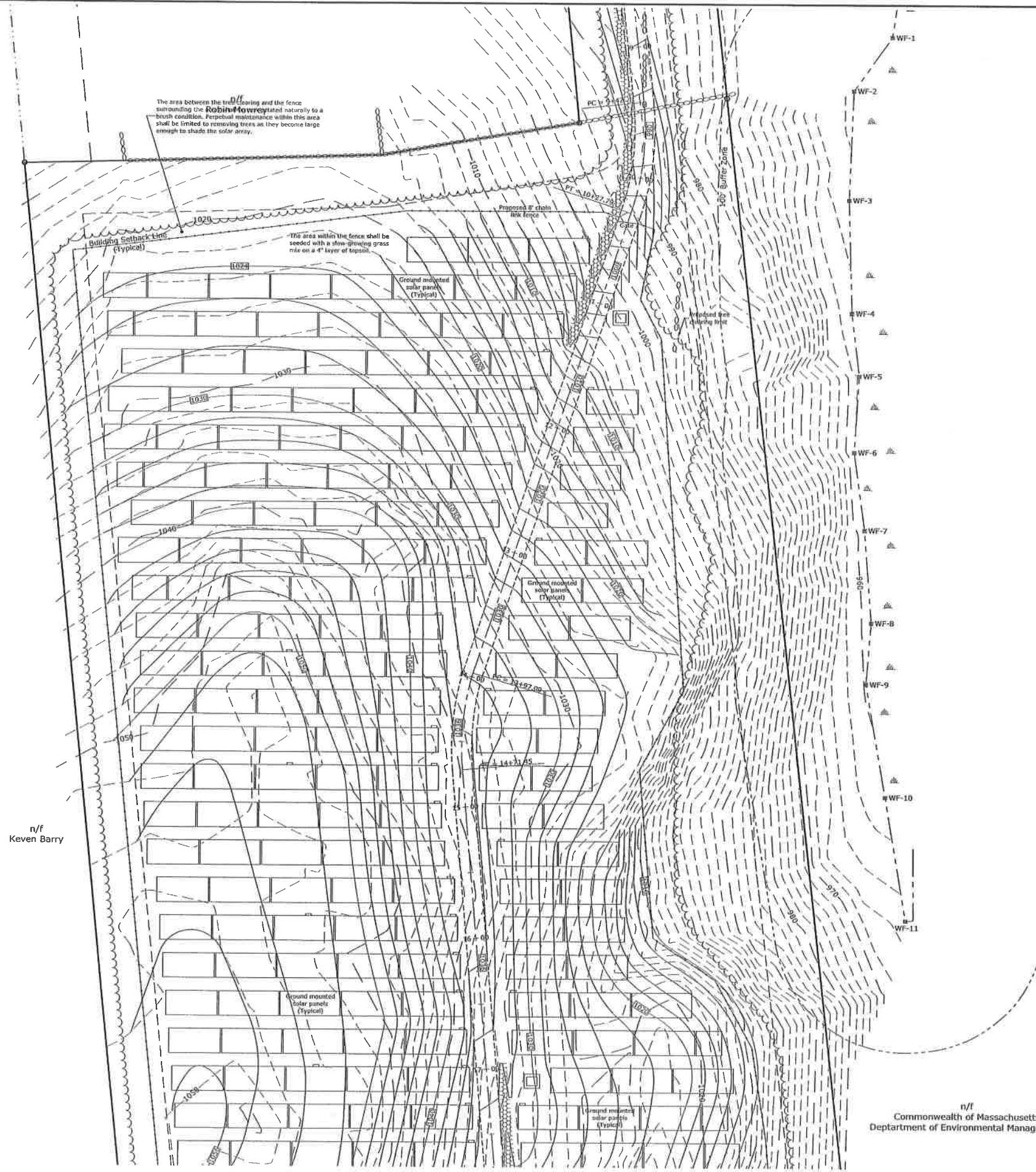
Date	April 19, 2018	Sheet No.	7
Job No.	G9121		

Soil Logs			
DH-1			
Depth	Horizon	Texture	Color
0'-8"	A	Sandy Loam	7.5YR 3/2
8"-20"	B	Sandy Loam	7.5YR 5/3
20"-84"	C	Sandy Loam	7.5YR 5/4
Mottles @ 10"			
Water seeping @ 12"			
DH-3			
Depth	Horizon	Texture	Color
0'-6"	A	Sandy Loam	7.5YR 3/2
6"-24"	B	Sandy Loam	7.5YR 5/3
24"-48"	C	Sandy Loam	7.5YR 5/4
Mottles @ 47"			



Massachusetts State Plane
Mainland Zone - NAD83

Elevations refer to NAVD 88



LAYOUT & GRADING PLAN
for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
Energy Development Group, LLC
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend

	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence

DATE: 4-23-18
NORMAN G. HILL, PE #31887

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By:	BDH	1/18
Designed By:	MHG	4/18
Drawn By:	MHG	4/18
Checked By:	NGH	4/18

Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

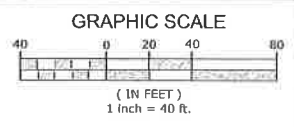
Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144
www.landplanninginc.com

Date	April 19, 2018	Sheet No.	8
Job No.	G9121		



n/f
Keven Barry

Elevations refer to NAVD 88



LAYOUT & GRADING PLAN
for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
Energy Development Group, LLC
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend	
	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence



DATE: 4-23-18
NORMAN G. HILL, PE #31887

REVISIONS			
No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			
Field By:		BDH	1/18
Designed By:		MHG	4/18
Drawn By:		MHG	4/18
Checked By:		NGH	4/18



Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

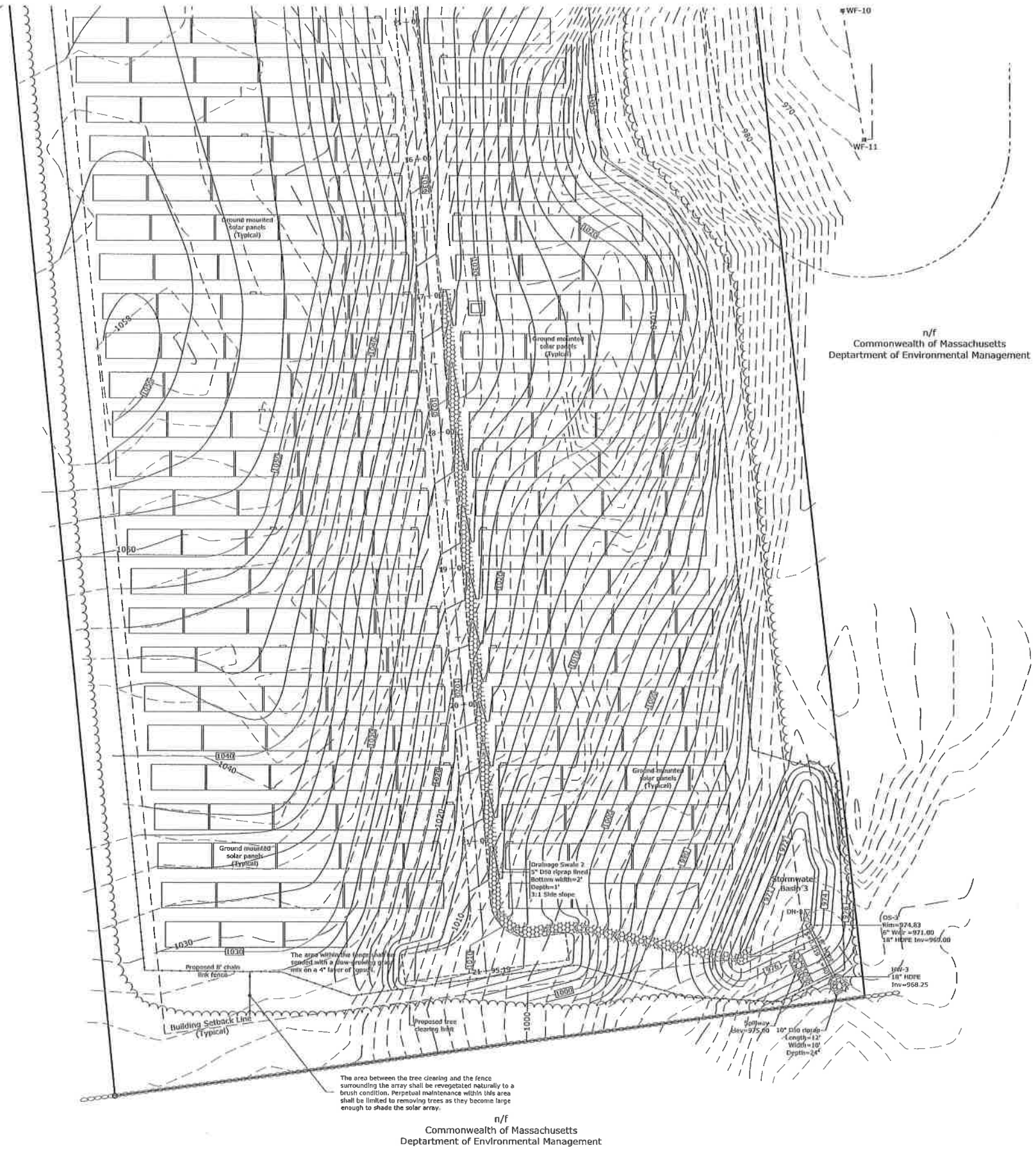
North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

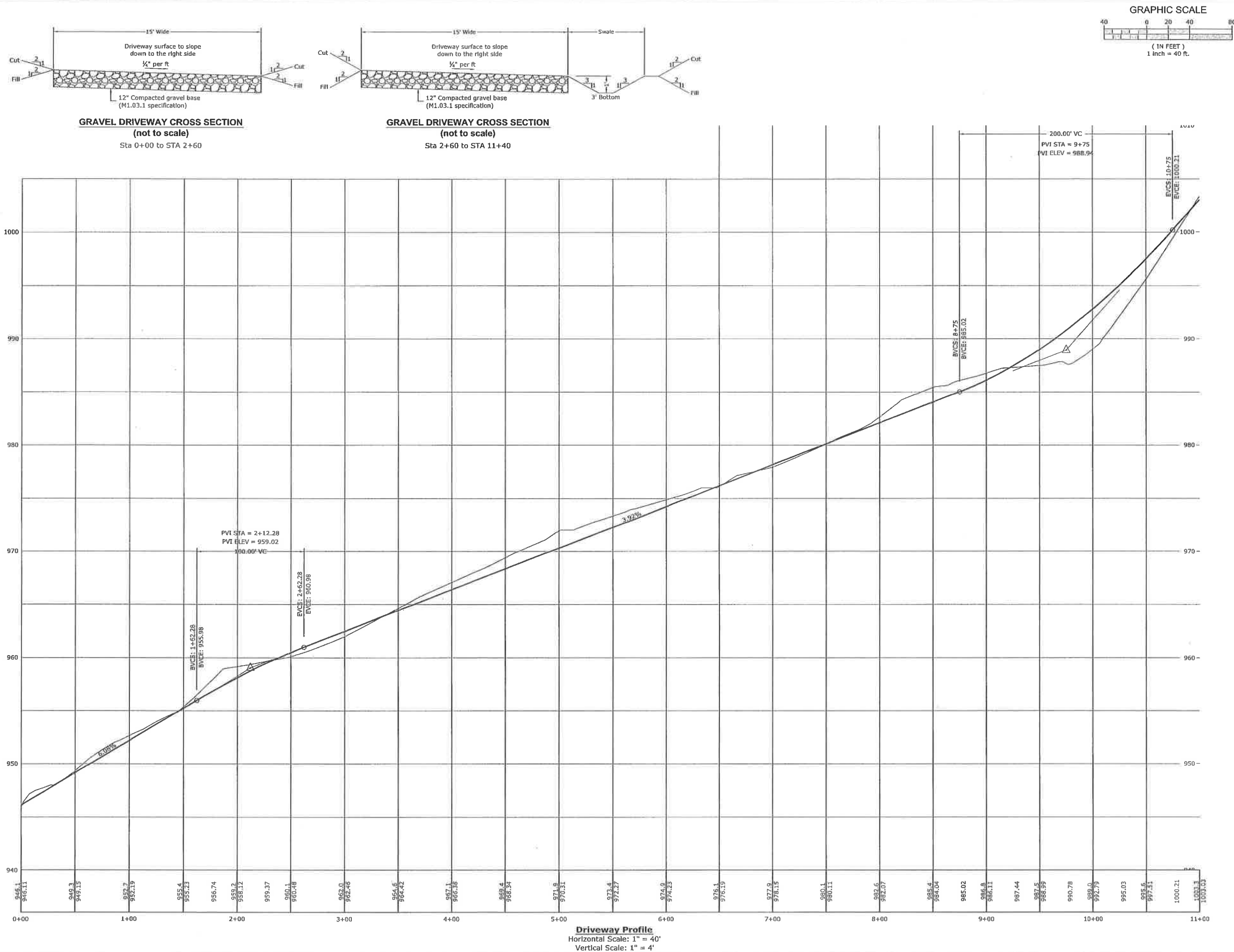
Date	April 19, 2018	Sheet No.	9
Job No.	G9121		

Soil Logs			
DH-1			
Depth	Horizon	Texture	Color
0'-8"	A	Sandy Loam	7.5YR 3/2
8"-20"	B	Sandy Loam	7.5YR 5/3
20'-40"	C	Sandy Loam	7.5YR 5/4
Mottles @ 10"			
Water seeping @ 12"			
DH-3			
Depth	Horizon	Texture	Color
0'-8"	A	Sandy Loam	7.5YR 3/2
8"-24"	B	Sandy Loam	7.5YR 5/3
24'-40"	C	Sandy Loam	7.5YR 5/4
Mottles @ 47"			



The area between the tree clearing and the fence surrounding the array shall be revegetated naturally to a brush condition. Perpetual maintenance within this area shall be limited to removing trees as they become large enough to shade the solar array.

n/f
Commonwealth of Massachusetts
Department of Environmental Management



**DRIVEWAY
PROFILE**

for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
**Energy Development
Group, LLC**
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend

	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence

DATE: 4-19-18
NORMAN G. HILL, PE #31887

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By:	BDH	1/18
Designed By:	MHG	4/18
Drawn By:	MHG	4/18
Checked By:	NGH	4/18

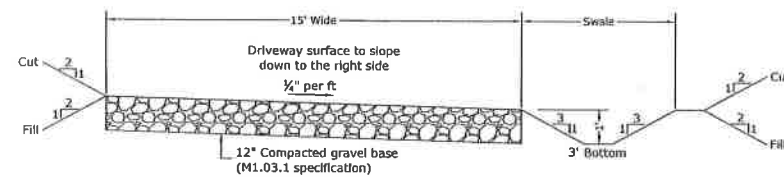
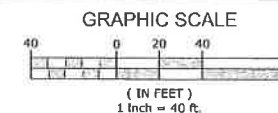
Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

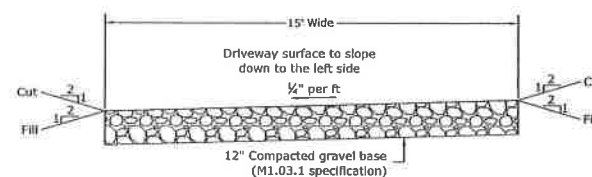
North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144
www.landplanninginc.com

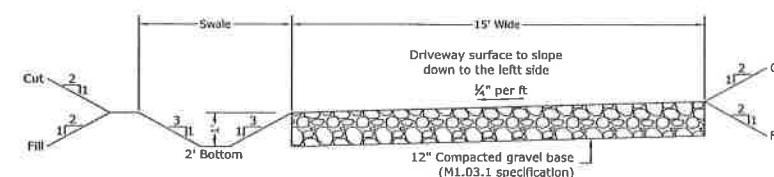
Date	April 19, 2018	Sheet No.	10
Job No.	G9121		



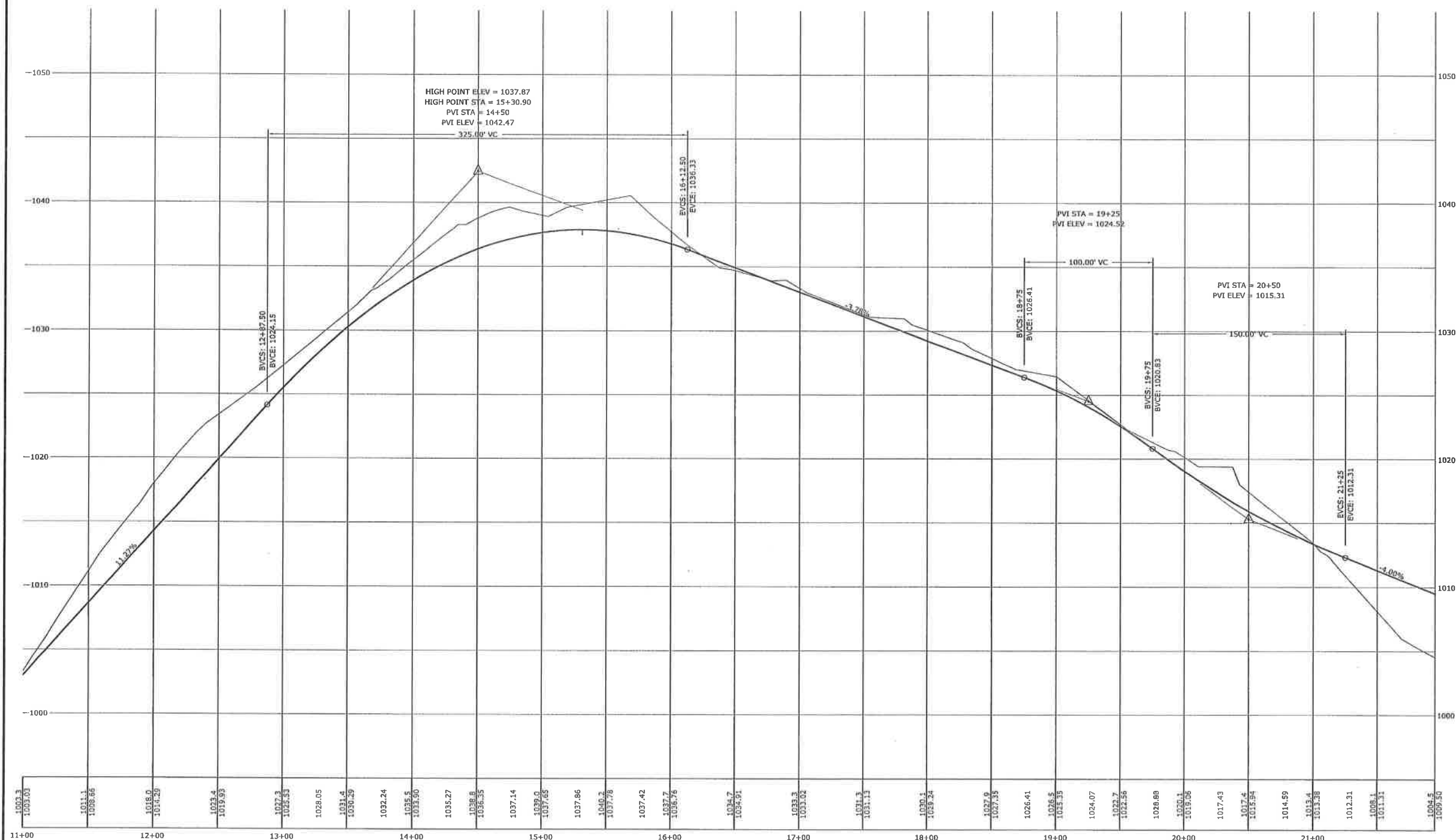
GRAVEL DRIVEWAY CROSS SECTION
(not to scale)
Sta 2+60 to STA 11+40



GRAVEL DRIVEWAY CROSS SECTION
(not to scale)
Sta 11+40 to STA 16+95



GRAVEL DRIVEWAY CROSS SECTION
(not to scale)
Sta 16+95 to STA 20+75



Driveway Profile
Horizontal Scale: 1" = 40'
Vertical Scale: 1" = 4'

**DRIVEWAY
PROFILE**
for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
**Energy Development
Group, LLC**
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend

	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence

NORMAN G. HILL, PE #31887
DATE: 4-19-18

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By:	BDH	1/18
Designed By:	MHG	4/18
Drawn By:	MHG	4/18
Checked By:	NGH	4/18

Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

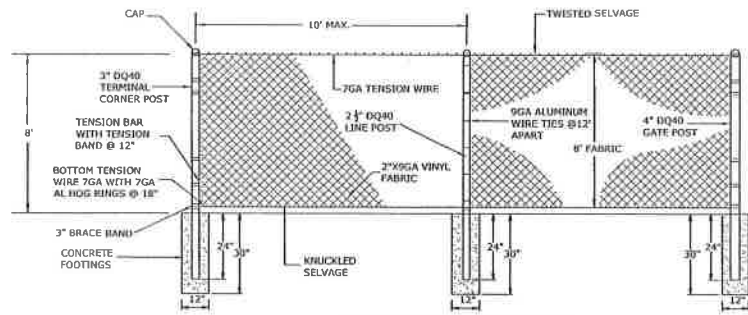
Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

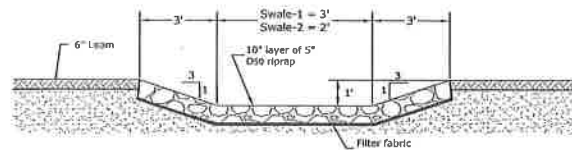
Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

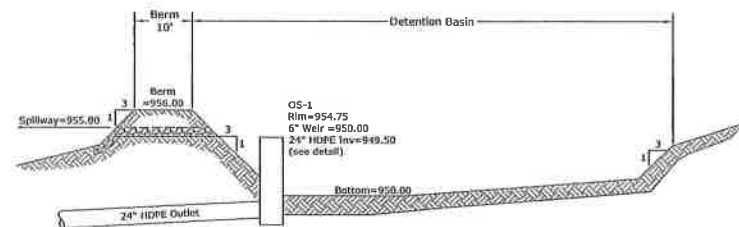
Date: April 19, 2018
Job No. G9121
Sheet No. 11



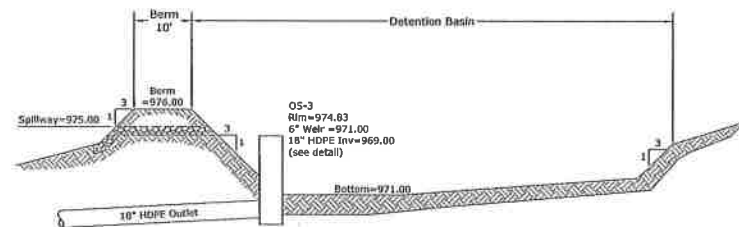
PERIMETER FENCE DETAIL
(not to scale)



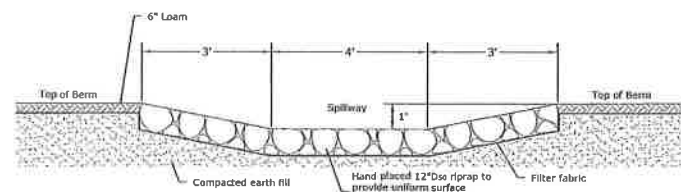
RIPRAP LINED SWALE DETAIL
(not to scale)



**STORMWATER BASIN 1
CROSS SECTION**
(not to scale)

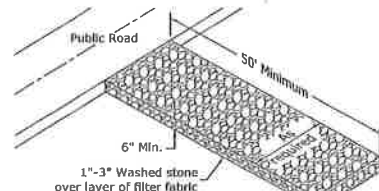


**STORMWATER BASIN 3
CROSS SECTION**
(not to scale)

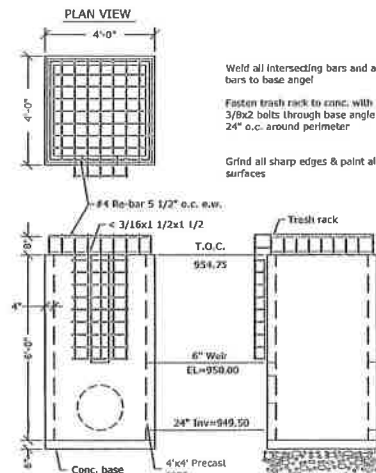


DETENTION BASIN SPILLWAY & BERM
(not to scale)

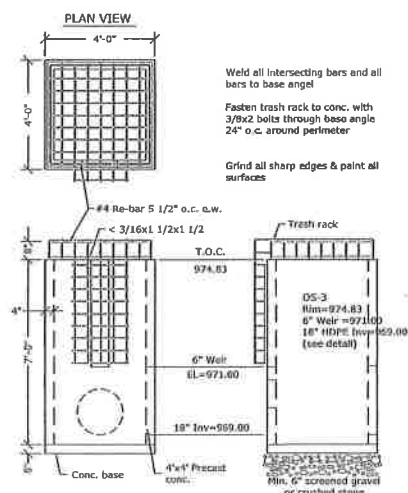
- NOTES:**
1. ALL MATERIALS ARE GALVANIZED
 2. GATE POSTS 4"
 3. TERMINAL POSTS 3"
 4. LINE POSTS 2.5"
 5. TOP TENSION WIRE TO MATCH FABRIC
 6. TENSION RINGS @ 12"
 7. TENSION WIRE TO MATCH FABRIC
 8. BOTTOM TENSION WIRE 7GA HOG RINGS WITH STEEL CORE
 9. DOOR CAPS RAIL ENDS
 10. 9GA TIE WIRES WITH STEEL CORE
 11. 3" BRACE BANDS ON TERMINAL CORNER POSTS
 12. FABRIC 2" MESH WITH 9GA STEEL CORE GALVANIZED



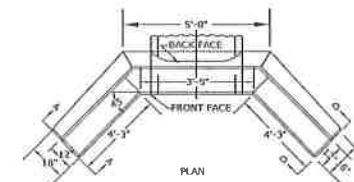
CONSTRUCTION ENTRANCE DETAIL
Not to Scale



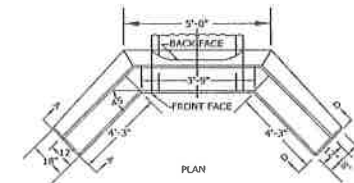
OUTFALL STRUCTURE OS-1 DETAIL
(not to scale)



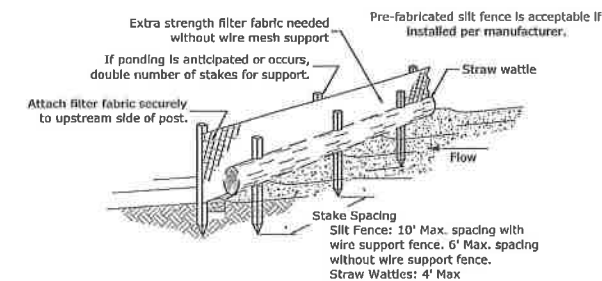
OUTFALL STRUCTURE OS-3 DETAIL
(not to scale)



HW-1 HEADWALL DETAIL
(not to scale)



HW-3 HEADWALL DETAIL
(not to scale)



SEDIMENT BARRIER DETAIL
(not to scale)

- Notes:**
1. Silt fence shall be placed on slope contours to maximize ponding efficiency.
 2. Inspect and repair fence after each storm event and remove sediment when necessary. 9" Maximum recommended storage height.
 3. Removed sediment shall be deposited to an area that will not contribute sediment off-site and can be permanently stabilized.
 4. Do not place silt fence in streams or concentrated flow conditions.

CONSTRUCTION DETAILS PLAN for **Solar Farm** Located at **60 Winchendon Road** Royalston, MA

Prepared for & Owned by
**Energy Development
Group, LLC**
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend

	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence

NORMAN G. HILL, PE #31887
DATE: 4-23-18

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By: BDH 1/18
Designed By: MHG 4/18
Drawn By: MHG 4/18
Checked By: NGH 4/18

Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

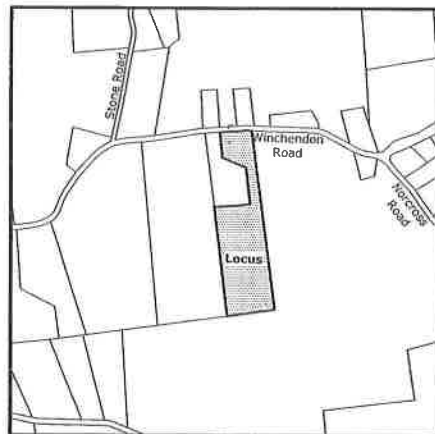
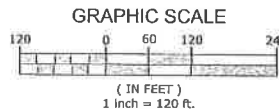
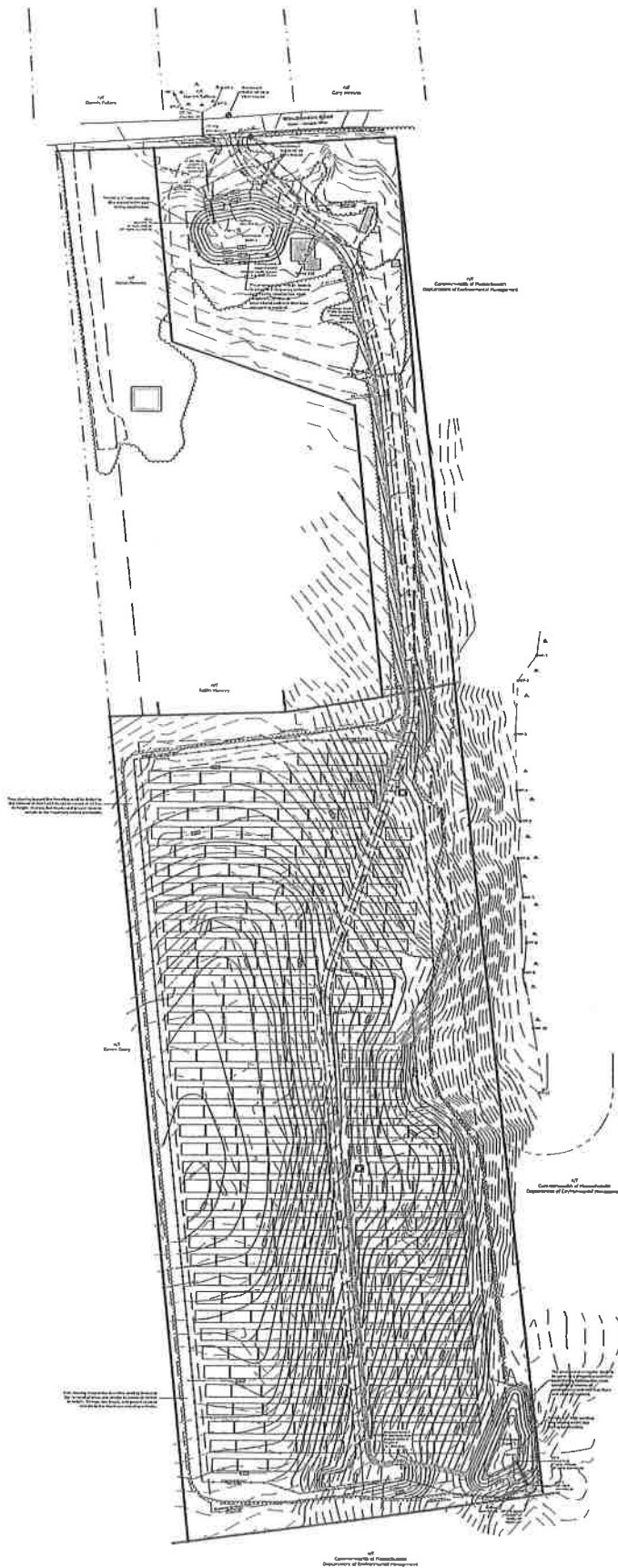
Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

Date:	April 19, 2018	Sheet No.
Job No.	G9121	12



Elevations refer to NAVD 88



LOCUS PLAN
Scale: 1" = 500'

General Notes

1. Place 4" loam and seed all disturbed areas of the project not otherwise improved.
2. All underground utility locations shown are based on field evidence and records provided to Land Planning, Inc.. These locations should be considered approximate. Other utilities may exist which are not evident or for which recent information was not found. The contractor must contact all utility companies and "Dig Safe" before excavation begins. We assume no responsibility for damages incurred as a result of utilities omitted or inaccurately shown.
3. It is the responsibility of the contractor to review all of the drawings and specifications associated with this project work and project scope prior to the initiation of construction. Should the contractor find a conflict with the documents, relative to the specifications or applicable codes, it is the contractor's responsibility to notify the project engineer of record in writing prior to the start of construction. Failure by the contractor to notify the project engineer shall constitute acceptance of full responsibility by the contractor to complete the scope of work as defined by the drawings and in full conformance with local regulations and codes.
4. All work shall conform to Town of Royalston requirements and Massachusetts Highway Department construction standards as applicable.

Erosion & Sediment Control Notes:

1. The contractor and all sub-contractors are to be made aware that this project is subject to an Order of Conditions from the Chapter Conservation Commission and its regulations applicable to this project. A copy of this Order is to be readily available on site at all times. DEP File # sign is to be posted.
2. Sediment barriers are to be installed where shown on this plan. The contractor and the owner are responsible for the proper maintenance of the sediment barriers and to identify and correct all sources of erosion. Extra sediment barrier materials are to be stored on site in order to quickly repair erosion prone areas. Periodic maintenance of the erosion control structures is required in order to insure the proper protection of the resource areas.
3. Rough grading and pavement construction are to be confined to areas as shown on these plans. Any stockpiled material that is subject to erosion shall be protected at its base on the down-slope side with a silt fence.
4. Temporary stabilization of disturbed areas is required to limit erosion toward abutting properties and public ways. All graded slopes are to be stabilized on a daily basis with special care taken to avoid routing rainfall through gullies toward the resource areas. Areas of erosion are to be repaired on a daily basis.
5. The contractor is to use proper judgment relative to construction practices during adverse weather conditions or periods of high groundwater. His work is to be performed near the wetland areas during periods of heavy rainfall. Inspection is required after more than 1/2" of rainfall in 24 hours.
6. All graded areas are to be loamed and seeded as soon as possible in order to insure the rapid stabilization of the erosion prone areas. A grass seed mixture of 20% Red Top, 60% Chewings Fescue and 20% Kentucky Bluegrass is recommended. "Hydroseed" with high fiber content.
7. The Sediment barriers shall remain in place until all upgradient areas have been stabilized.
8. During periods of heavy rainfall, it will be expected to experience erosion of the unstabilized slopes. Immediate attention to the maintenance of these eroded areas will further insure the successful stabilization of the exposed slopes while limiting the impacts to nearby resource areas.
9. Periodic inspections of the entire construction site are to be performed by a competent representative who will insure the adherence to the regulations as set forth in 310 CMR 10.00. No unauthorized individuals are to enter the construction area without the expressed consent of the owner.
10. The Applicant is to notify the Conservation Commission once the Jurisdictional work has been completed and the entire site has been properly stabilized. Upon approval of the work subject to the Order of Conditions, the applicant is to receive a Certificate of Compliance.

References

Deed: Book 58337 Page 204

Plans: Plan Book 676 Plan 52

Assessors: Map 11 Block 77 Parcel 0
Map 16 Parcel 18

Datum: Horizontal - NAD83, Mass. State Plane, Mainland Zone
Vertical - NAVD 88

Applicant

Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645

Owner

Energy Development Group, LLC
2885 Route 9, Unit 2
Howell, NJ 07731
267-567-3645

SEDIMENTATION & EROSION CONTROL

for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
Energy Development Group, LLC
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 120'

Legend

- Drop Inlet
- Flared End
- Proposed Contour
- 100.0 x Proposed Spot Grade
- 100.0 x Existing Contour
- Utility Pole
- Water Gate Valve
- Hydrant
- Underground Electric
- Proposed Fence



DATE: 4-12-18
NORMAN G. HILL, PE #31887

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			
Field By:		BDH	1/18
Designed By:		MHG	4/18
Drawn By:		MHG	4/18
Checked By:		NGH	4/18



Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

Date
April 19, 2018

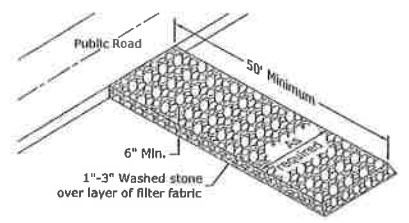
Job No.
G9121

Sheet No.

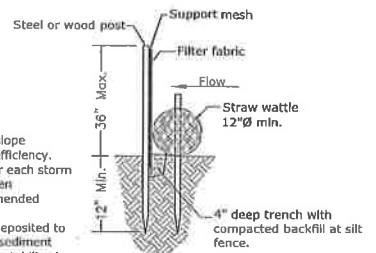
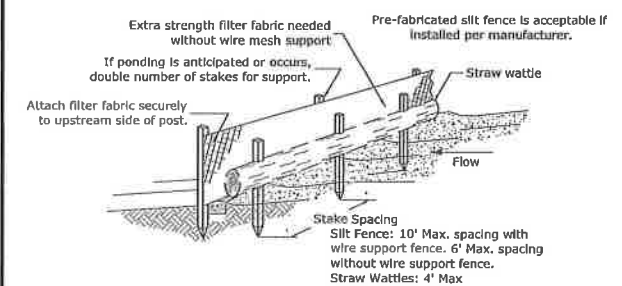
13



Elevations refer to NAVD 88

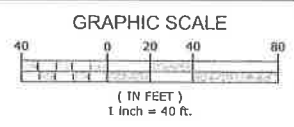
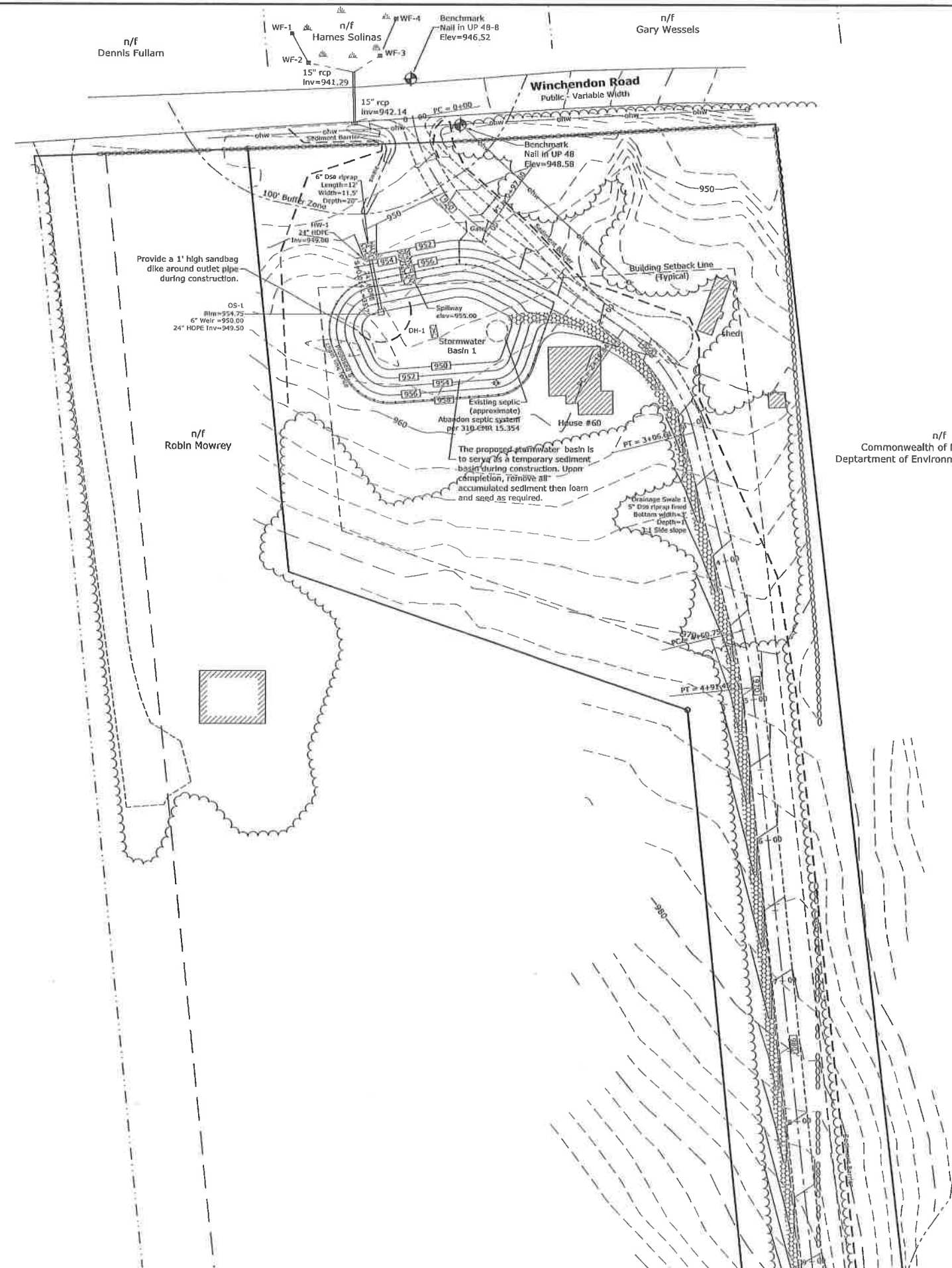


CONSTRUCTION ENTRANCE DETAIL
Not to Scale



SEDIMENT BARRIER DETAIL
(not to scale)

- Notes:
1. Silt fence shall be placed on slope contours to maximize ponding efficiency.
 2. Inspect and repair fence after each storm event and remove sediment when necessary. 9" Maximum recommended storage height.
 2. Removed sediment shall be deposited to an area that will not contribute sediment off-site and can be permanently stabilized.
 4. Do not place silt fence in streams or concentrated flow conditions.



SEDIMENTATION & EROSION CONTROL
for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
Energy Development Group, LLC
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend

	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence

Norman G. Hill, PE DATE: 4-19-18
NORMAN G. HILL, PE #31887

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By:	BDH	1/18
Designed By:	MHG	4/18
Drawn By:	MHG	4/18
Checked By:	NGH	4/18

Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144
www.landplanninginc.com



Elevations refer to NAVD 86.
Fencing shall be limited to shrubs in excess of 10 feet brush, and ground cover to aximum extent practicable.

n/f
Keven Barry

The area between the ~~tree~~ clearing and the fence surrounding the ~~Robinson~~ ~~Hay~~ ~~field~~ ~~is~~ ~~to~~ ~~be~~ ~~maintained~~ ~~naturally~~ ~~to~~ ~~a~~ ~~brush~~ ~~condition~~. ~~Perpetual~~ ~~maintenance~~ ~~within~~ ~~this~~ ~~area~~ ~~shall~~ ~~be~~ ~~limited~~ ~~to~~ ~~removing~~ ~~trees~~ ~~as~~ ~~they~~ ~~become~~ ~~large~~ ~~enough~~ ~~to~~ ~~shade~~ ~~the~~ ~~solar~~ ~~array~~.

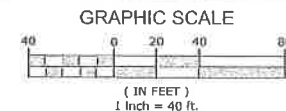
This area within the fence shall be seeded with a slow-growing Grass mix on a 4" layer of topsoil.

Ground mounted solar panels (Typical)

Ground mounted solar panels (Typical)

Ground mounted solar panels (Typical)

Ground mounted solar panels (Typical)



SEDIMENTATION & EROSION CONTROL

for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
Energy Development Group, LLC
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend

	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence

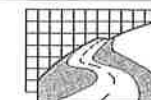


Norman G. Hill DATE: 4-19-18
NORMAN G. HILL, PE #31887

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By:	BDH	1/18
Designed By:	MHG	4/18
Drawn By:	MHG	4/18
Checked By:	NGH	4/18



Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

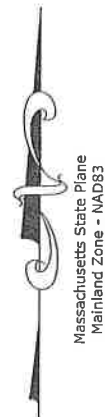
www.landplanninginc.com

Date
April 19, 2018
Job No.
G9121

Sheet No.

15

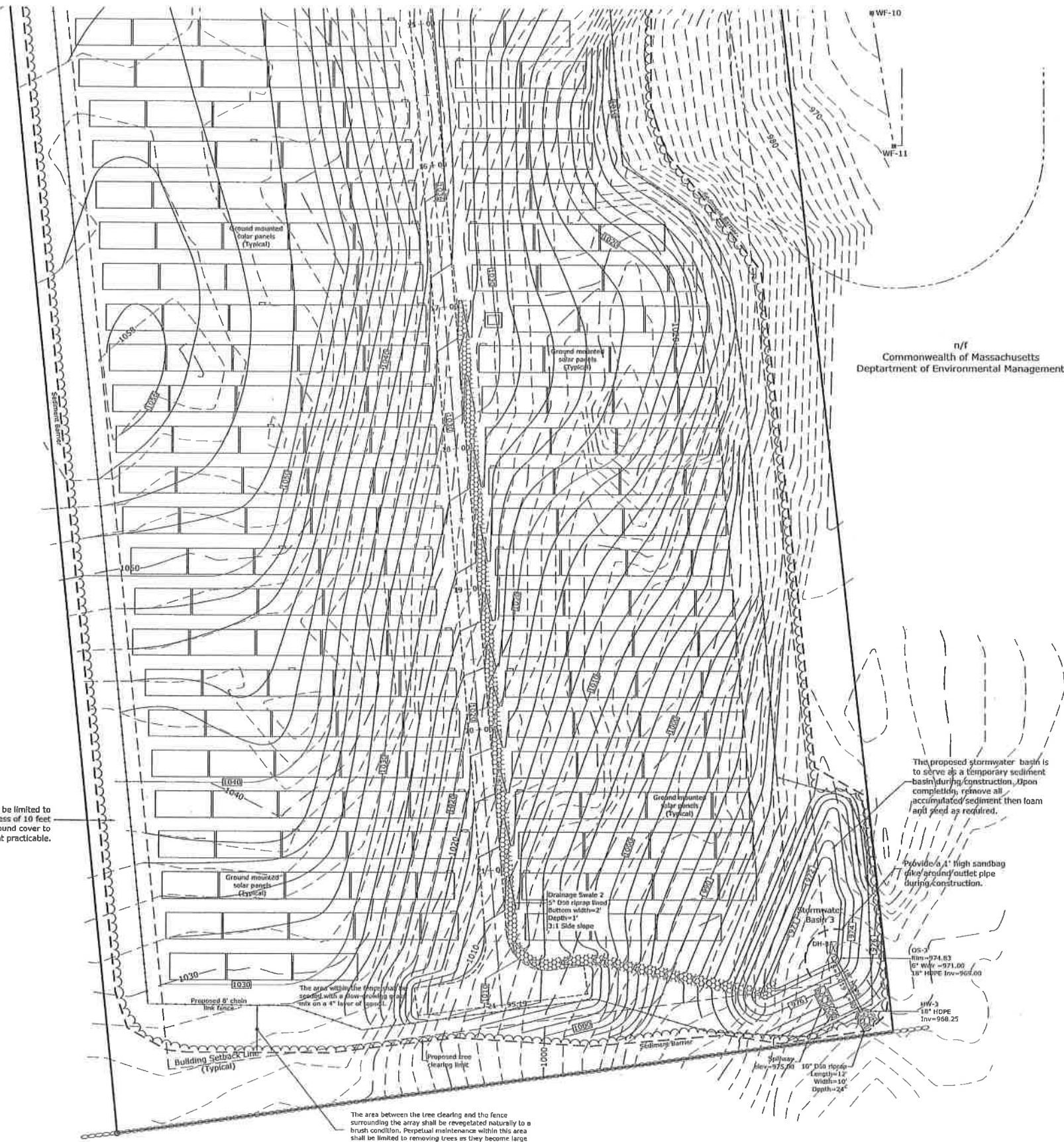
n/f
Commonwealth of Massachusetts
Department of Environmental Management



Elevations refer to NAVD 88

n/f
Keven Barry

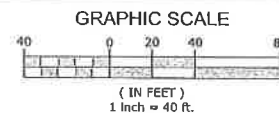
d the fence line shall be limited to
s and shrubs in excess of 10 feet
s, low brush, and ground cover to
the maximum extent practicable.



The area between the tree clearing and the fence
surrounding the array shall be revegetated naturally to a
brush condition. Perpetual maintenance within this area
shall be limited to removing trees as they become large
enough to shade the solar array.

n/f
Commonwealth of Massachusetts
Department of Environmental Management

n/f
Commonwealth of Massachusetts
Department of Environmental Management



SEDIMENTATION & EROSION CONTROL

for
Solar Farm
Located at
60 Winchendon Road
Royalston, MA

Prepared for & Owned by
**Energy Development
Group, LLC**
2885 Route 9N
Howell, NJ 07731

April 19, 2018
Scale: 1" = 40'

Legend

	Drop Inlet
	Flared End
	Proposed Contour
	Proposed Spot Grade
	Existing Contour
	Utility Pole
	Water Gate Valve
	Hydrant
	Underground Electric
	Proposed Fence

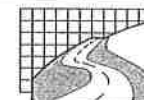


Norman G. Hill, PE DATE: 4-22-18
NORMAN G. HILL, PE #31887

REVISIONS

No.	Date	Design	Checked
1			
2			
3			
4			
5			
6			

Field By:	BDH	1/18
Designed By:	MHG	4/18
Drawn By:	MHG	4/18
Checked By:	NGH	4/18



Land Planning, Inc.
Civil Engineers • Land Surveyors
Environmental Consultants

Bellingham
167 Hartford Ave.
Bellingham, MA 02019
508-966-4130

North Grafton
214 Worcester St.
N. Grafton, MA 01536
508-839-9526

Hanson
1115 Main Street
Hanson, MA 02341
781-294-4144

www.landplanninginc.com

Date
April 19, 2018
Job No.
G9121

Sheet No.

16