

ENVIRONMENTAL CONCEPT PLAN

TEN OAKS SOLAR

6160 TEN OAKS ROAD CLARKSVILLE, MD 21029

GENERAL NOTES

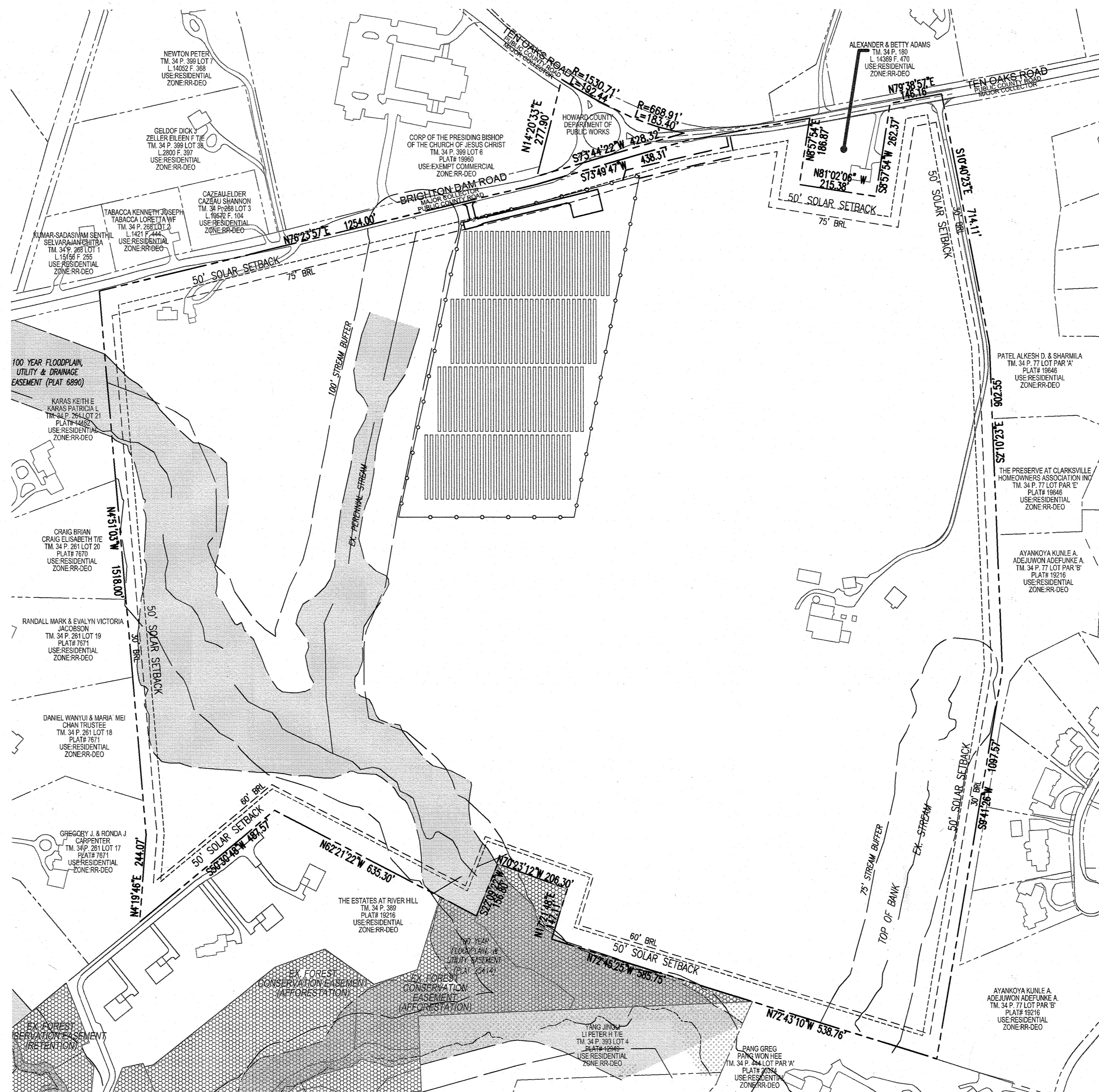
- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED FROM HOWARD COUNTY GIS.
- EXISTING TREELINE + TIMMONS GROUP ENGINEERING + TIMMONS GROUP BASED ON HOWARD COUNTY GIS.
- BEARINGS AND DISTANCES SHOWN HEREON WERE ACQUIRED FROM RECORDED PLATS AND DEEDS.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM, HOWARD COUNTY MONUMENT NOS. 34FD AND 34ES WERE USED FOR THIS PROJECT.
- THE SUBJECT PROPERTY IS ZONED "RR-DEO" IN ACCORDANCE WITH THE 10/6/13 ZONING REGULATIONS, AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 75-2003.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE WETLANDS, STREAM(S) OR THEIR REQUIRED BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100-YEAR FLOODPLAIN.
- THERE IS A 100 YEAR FLOODPLAIN LOCATED WITHIN THE PROPERTY BUT NOT WITHIN THE PROJECT SITE.
- THERE ARE NO STEEP SLOPES OVER 20,000 SF CONTIGUOUS ARE LOCATED ON-SITE.
- FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH THE FUTURE SITE DEVELOPMENT PLAN.
- THERE ARE WETLANDS LOCATED WITHIN THE PROPERTY BUT NOT WITHIN THE PROJECT SITE.
- STREAM BUFFER SHOWN ON PROPERTY ARE BASED ON ENVIRONMENTAL REPORT BY ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, DATED OCTOBER 28, 2021, IN ACCORDANCE WITH SECTION 16.116(c) OF THE HOWARD COUNTY SUBDIVISIONS AND LAND DEVELOPMENT REGULATIONS "NECESSARY DISTURBANCE" FOR STORM DRAIN OUTFALL CONSTRUCTION IN THE STREAM BUFFER WILL BE SUBMITTED AT THE SITE DEVELOPMENT PLAN STAGE.
- GEOTECHNICAL INVESTIGATIONS SHALL BE COMPLETED AND SUBMITTED WITH THE SITE DEVELOPMENT PLANS.
- A NOISE STUDY IS NOT REQUIRED FOR THIS SITE.
- BRIGHTON DAM ROAD IS CLASSIFIED AS A MAJOR COLLECTOR, TEN OAKS ROAD IS CLASSIFIED AS A MAJOR COLLECTOR.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
- STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF STRUCTURAL, NON-STRUCTURAL PRACTICES AND MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. THESE PRACTICES INCLUDE NON-ROOF TOP DISCONNECTION (N-2), MICRO-BIORETENTION (M-6), AND LEVEL SPREADER. THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
- APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION PLAN. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION PROCESS. THE APPLICANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.
- APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME. THE SITE DEVELOPMENT PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING AND ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.
- ISOLATED, SURFACE SMOOTHING AND/OR FINE GRADING MAY BE REQUIRED TO SUPPORT SOLAR EQUIPMENT INSTALLATION. HOWEVER, NO MASS GRADING WILL BE REQUIRED. ISOLATED FINE GRADES WILL BE PROVIDED WITH SITE DEVELOPMENT PLAN SUBMISSION, AS REQUIRED.
- THERE ARE EXISTING STRUCTURES LOCATED WITHIN THE PROPERTY BUT NOT WITHIN THE PROJECT AREA WHICH ARE TO REMAIN.
- UPON DECOMMISSIONING OF THE SOLAR FACILITY THE PETITIONER/OPERATOR WILL SUBSEQUENTLY REMOVE LANDSCAPING AND STORMWATER MANAGEMENT PRACTICES AND RESTORE ACCORDINGLY (AT THE REQUEST OF THE PROPERTY OWNER).
- ALL ACCESS DRIVES FROM THE PUBLIC ROAD TO THE EQUIPMENT PAD TO BE 16' MINIMUM WIDTH AND CAPABLE OF SUPPORTING FIRE DEPARTMENT VEHICLES.
- THE AREAS BENEATH AND AROUND THE SOLAR PANELS WILL BE PLANTED WITH A NATIVE GRASS/CLOVER MIX. THE GRASS MUST BE ESTABLISHED PRIOR TO ANY WORK BEGINNING ON THE SITE. IT IS UNDERSTOOD THAT IT TAKES 3-5 YEARS FOR THE CLOVER TO ESTABLISH AND MAY NOT BE PRESENT AT THE TIME OF CONSTRUCTION. THE GRASSES AND CLOVER PROVIDE ECOLOGICAL BENEFITS INCLUDING POLLINATOR HABITAT AND FOOD.
- THIS PROJECT IS SUBJECT TO ZONING AND LANE USE BOARD OF APPEALS CASE BA-21-013C, ON AUGUST 18, 2021; THE HOWARD COUNTY BOARD OF APPEALS GRANTED THE PETITION OF SOLHARVEST ENERGY LLC, PROVIDED THAT THE PETITIONER MEET CERTAIN CONDITIONS:
 - THE COMMERCIAL GROUND MOUNT SOLAR COLLECTOR FACILITY CONDITIONAL USE SHALL BE CONDUCTED IN CONFORMANCE WITH THE PETITION AS SUBMITTED AND AS SHOWN ON THE CONDITIONAL USE PLAN DATED JULY, 2021, AND NOT TO ANY OTHER ACTIVITIES, USES, OR STRUCTURES ON THE PROPERTY.
 - PETITIONER SHALL COMPLY WITH ALL CONDITIONAL USE STANDARDS.
 - THE SITE DEVELOPMENT PLAN, OR ITS EQUIVALENT, SHALL INCLUDE A NOTE CONTAINING ALL CONDITIONS OF APPROVAL.
 - PETITIONER SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
 - THE SYSTEMS SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL LAWS AND PROVISIONS.
 - ANY COMMERCIAL SOLAR FACILITY THAT IS NO LONGER USED SHALL BE REMOVED BY THE PROPERTY OWNER FROM THE SITE WITHIN SIX MONTHS OF THE DATE THAT THE USE CEASES AND SHALL PROVIDE A BOND OR OTHER SURETY AS DETERMINED BY THE HOWARD COUNTY DIRECTOR OF FINANCE TO COVER THE COST OF FUTURE REMOVAL.
 - THE PREMISES SHALL BE MAINTAINED AT ALL TIMES IN A CLEAN AND ORDERLY CONDITIONAL, INCLUDING THE CARE OR REPLACEMENT OF PLANT MATERIALS REQUIRED IN THE LANDSCAPING PLAN. THE RESPONSIBILITY FOR COMPLIANCE WITH THIS PROVISION SHALL BE WITH ALL PARTIES HAVING A LEASE OR OWNERSHIP INTEREST IN THE COMMERCIAL SOLAR FACILITY.

ENVIRONMENTAL SITE DESIGN NARRATIVE:

- THERE ARE ENVIRONMENTAL FEATURES PREDOMINANTLY LOCATED ON THE WESTERN AND SOUTHERN PART OF THE SITE. TREE BUFFERS AND HEDGEROWS ARE PRESENT AROUND THE PERIMETER OF THE WESTERN BOUNDARY AND SOUTHWESTERN PORTIONS OF THE PROJECT AREA. WETLAND VEGETATION, STREAM BUFFER, AND 100-YR FLOODPLAIN IS PRESENT ALONG ITS WESTERN AND SOUTHERN BOUNDARY. THERE IS NO PROPOSED DISTURBANCE TO THE WETLAND, AND WETLAND BUFFER. THERE IS A MINOR DISTURBANCE TO THE STREAM BUFFER REQUIRED FOR STORM DRAIN OUTFALL CONSTRUCTION. THIS IS CONSIDERED "NECESSARY DISTURBANCE" AS OUTLINED IN SECTION 16.116(c) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. DISTURBANCES TO ENVIRONMENTAL FEATURES AND NATURAL RESOURCES WILL BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE.
- THE SITE NATURALLY SLOPES FROM THE NORTH TO SOUTH BY SHEET FLOW. SHALLOW CONCENTRATED FLOW AND NATURAL STREAM. THE SITE HAS BEEN DESIGNED TO MAINTAIN THE NATURAL DRAINAGE PATTERNS, WITH NO CHANGES TO THE NATURAL DRAINAGE PATTERN.
- THE CONCEPTUAL REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN IS ACHIEVED THROUGH THE ENVIRONMENTAL SITE DESIGN (ESD) FOR THE PROJECT TO THE MAXIMUM EXTENT PRACTICABLE (MEP). THE RESULTS OF THE ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION". THE ESD CONCEPT INCLUDES THE USE OF NON-ROOF TOP DISCONNECTION (N-2), MICRO-BIORETENTION (M-6), AND LEVEL SPREADERS.
- SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE OF PROPOSED SILT FENCE AND SUPER SILT FENCE PERIMETER CONTROLS. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT DURING THE FUTURE SITE DEVELOPMENT PLAN PHASE OF THE PROJECT.
- STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET THROUGH THE USE OF NON-ROOF TOP DISCONNECTION (N-2), MICRO-BIORETENTION (M-6), AND LEVEL SPREADERS. PROPOSED PRACTICES HAVE BEEN MAXIMIZED TO THE EXTENT PRACTICAL. THE CALCULATED RAINFALL TARGET (PE) FOR THIS PROJECT IS 1.0", AND THE TOTAL RUNOFF VOLUME (ESD_v) REQUIRED IS 2,522 CF. THE CALCULATED RAINFALL PROVIDED (PE) FOR THIS PROJECT IS 1.03", AND THE TOTAL RUNOFF VOLUME (ESD_v) PROVIDED IS 2,537 CF.
- AT THIS CONCEPT STAGE OF DEVELOPMENT, NO DESIGN MANUAL WAIVERS ARE ANTICIPATED.

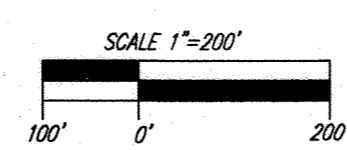
SITE ANALYSIS DATA CHART

A. TOTAL SITE AREA:	114.63 AC.
B. AREA OF PLAN SUBMISSION:	10.07 AC. (COMBINED LOD & SOLAR AREA)
C. COMMERCIAL SOLAR OPERATIONAL AREA:	9.91 AC.
D. AREA OF WETLANDS AND WETLAND BUFFERS:	78,308 SF ± OR 1.80 AC ±
E. AREA OF FLOODPLAIN:	544,931 SF ± OR 12.51 AC ±
F. AREA OF 75' STREAM BUFFER:	220,472 SF OR 5.06 AC.
G. AREA OF 100' STREAM BUFFER:	789,448 SF OR 17.86 AC.
H. AREA OF FOREST:	658,060 SF OR 13.5 AC ±
I. AREA OF MODERATE SLOPES (15%-24.99%):	0.00 SF OR 0.00 AC ±
J. AREA OF STEEP SLOPES (25% & GREATER):	0.00 SF OR 0.00 AC ±
K. LIMIT OF DISTURBED AREA:	448,923 SF ± OR 10.31 AC ±
L. PROPOSED USES FOR SITE AND STRUCTURES:	SOLAR FACILITY COMMERCIAL
M. GREEN OPEN AREA:	9.86 AC ± (COMBINED LOD & SOLAR AREA)
N. PROPOSED IMPERVIOUS AREA:	0.21 AC ± (COMBINED LOD & SOLAR AREA)
O. PRESENT ZONING DESIGNATION:	RR-DEO
P. OPEN SPACE REQUIRED:	N/A
Q. DPZ FILE REFERENCES:	BA-21-013C



LOCATION MAP

SCALE: 1"=200'

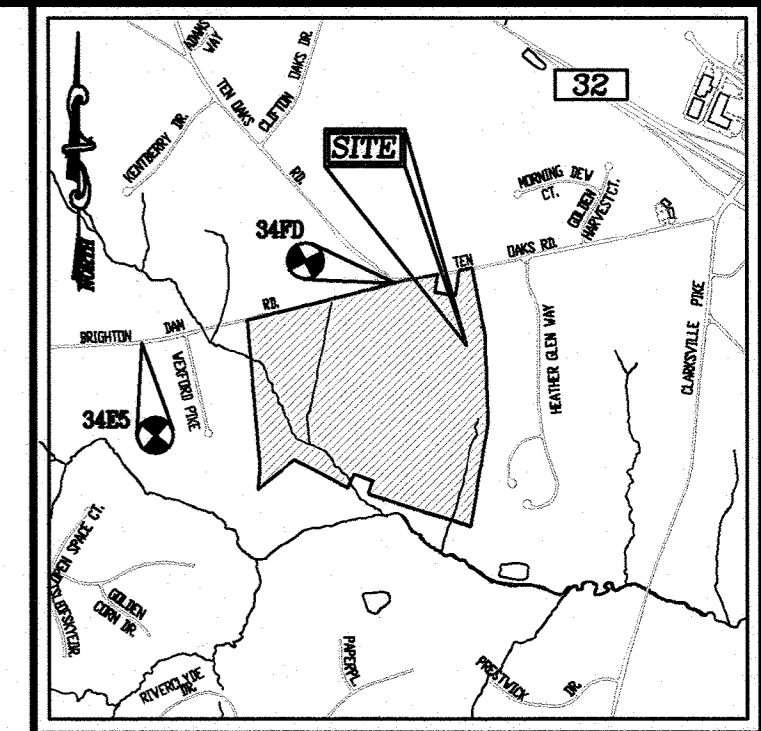


BENCHMARKS

HOWARD COUNTY BENCHMARK 34FD
N 560,162.580 E 1,325,180.368 ELEV. 437.493
HOWARD COUNTY BENCHMARK 34ES
N 559,538.074 E 1,322,535.882 ELEV. 460.449

LEGENDS:

- PARCEL BOUNDARY
- ADJACENT BOUNDARY
- 50' SOLAR SETBACK
- BUILDING RESTRICTION LINE
- EXISTING PAVING
- EXISTING TREELINE
- STREAM CENTERLINE
- STREAM BUFFER
- EXISTING FOREST CONSERVATION AREA
- 100-YEAR FLOODPLAIN
- SECURITY FENCE
- PROPOSED PAVING



VICINITY MAP

SCALE: 1"=2000'
ADC MAP COORDINATES: PAGE 31 / GRID B-C 2

SHEET INDEX

DESCRIPTION	SHEET NO.
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OWNER

E. ALEXANDER AND BETTY SMITH ADAMS TRUSTEES OF THE RICHARD WARFIELD TRUST, 6096 KEYSER ROAD, HUME VA 22639 410-531-9655

DEVELOPER

TEN OAKS SOLAR LLC
SOLHARVEST ENERGY
ATTN: JOHN FORGASH
172 TUCKERTON ROAD
MEDFORD, NJ 08055
PHONE: 609-678-6911

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN COVER SHEET

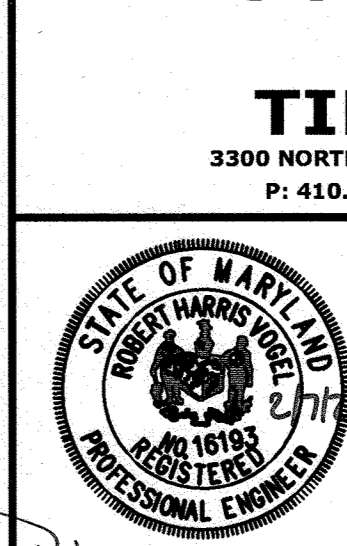
TEN OAKS SOLAR

6160 TEN OAKS ROAD, CLARKSVILLE, MD 21029
DEED L.14369 F.464

TAX MAP 34 BLOCK 11
5TH ELECTION DISTRICT

ZONED RR-DEO
PARCEL 43
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING



TIMMONS GROUP

3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
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DRAWN BY: IMH
CHECKED BY: RHV
DATE: JANUARY 2022
SCALE: AS SHOWN
W.O. NO.: 46576

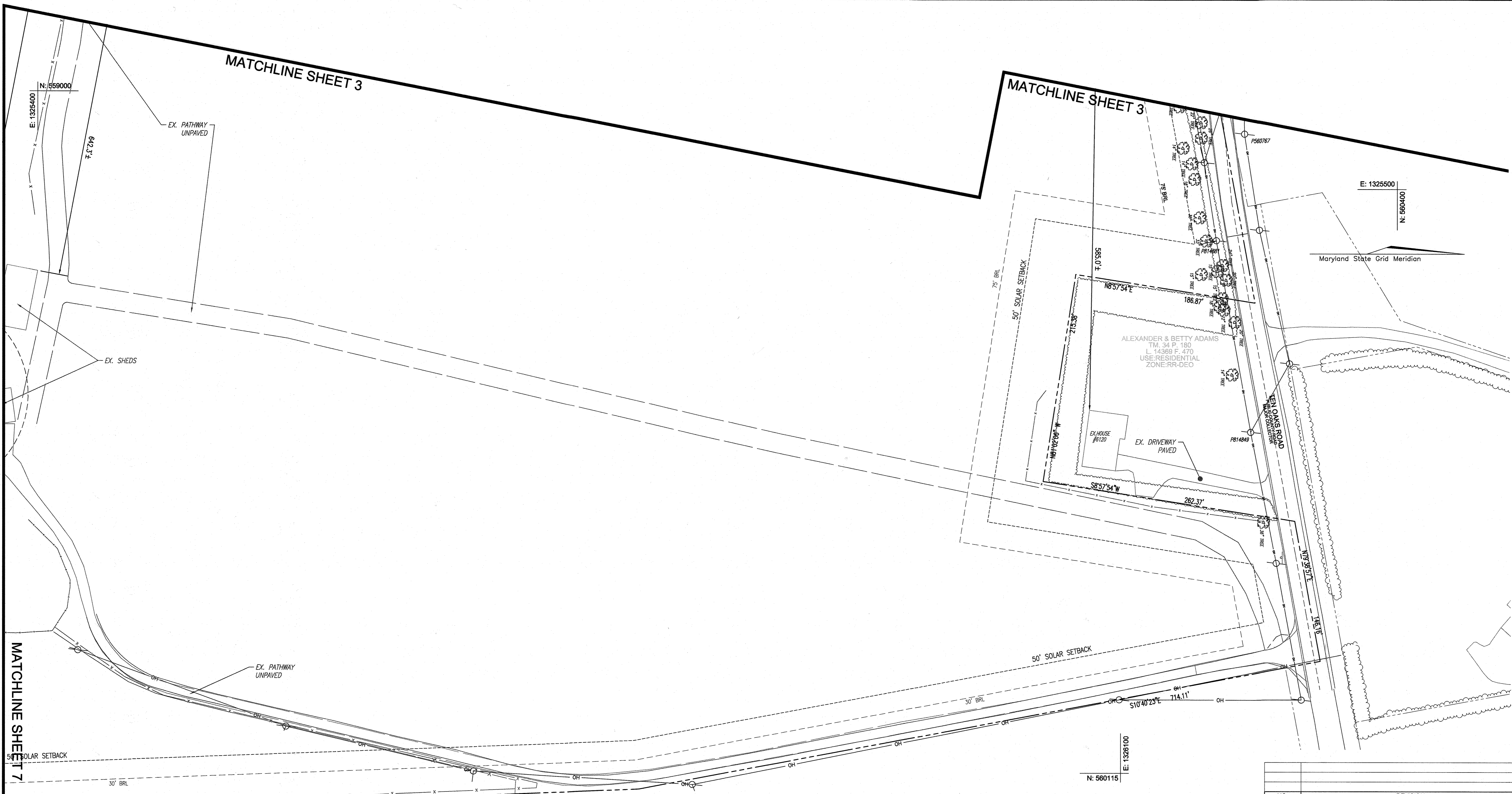
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. EXPIRATION DATE: 09-27-2022

1 SHEET OF 11

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[Signature] 3/17/22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

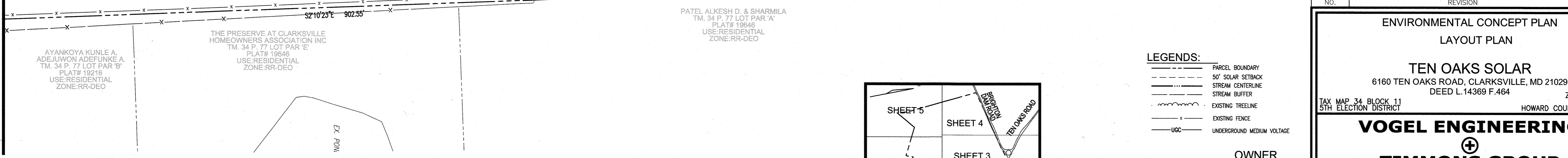
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CHIEF, DIVISION OF LAND DEVELOPMENT DATE



MATCHLINE SHEET 7

MATCHLINE SHEET 3

MATCHLINE SHEET 3

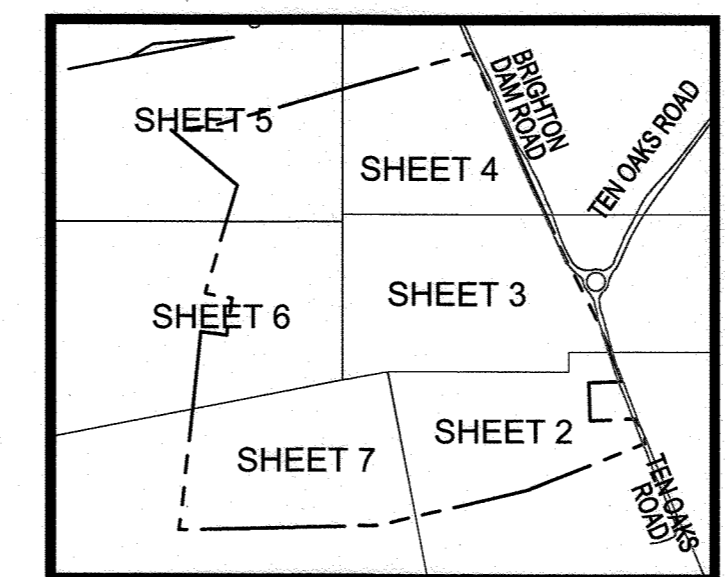


AYANKOYA KUNLE A. ADEJUWON ADEFUNKE A. TM. 34 P. 77 LOT PAR 'B' PLAT# 19216 USE: RESIDENTIAL ZONE: RR-DEO

THE PRESERVE AT CLARKSVILLE HOMEOWNERS ASSOCIATION INC TM. 34 P. 77 LOT PAR 'E' PLAT# 19846 USE: RESIDENTIAL ZONE: RR-DEO

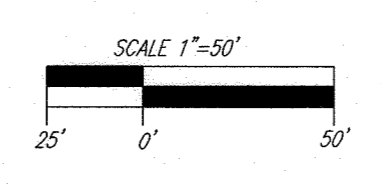
PATEL ALKESH D. & SHARMILA TM. 34 P. 77 LOT PAR 'A' PLAT# 19846 USE: RESIDENTIAL ZONE: RR-DEO

- LEGENDS:**
- PARCEL BOUNDARY
 - - - 50' SOLAR SETBACK
 - STREAM CENTERLINE
 - STREAM BUFFER
 - EXISTING TREELINE
 - - - EXISTING FENCE
 - UGC UNDERGROUND MEDIUM VOLTAGE



KEY MAP
NOT TO SCALE

LAYOUT PLAN
SCALE: 1"=50'



NOTES:
1. UNDERGROUND FEEDER WILL RUN FROM THE NEW OVERHEAD POLE WITH DISCONNECT SWITCH TO THE SWITCHGEAR WITHIN THE PROJECT AREA.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3/17/22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 2/24/22
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

OWNER
E. ALEXANDER AND BETTY SMITH ADAMS TRUSTEES OF THE RICHARD WARFIELD TRUST, 6096 KEYSER ROAD, HUME VA 22639 410-531-9655

DEVELOPER
TEN OAKS SOLAR LLC SOLHARVEST ENERGY ATTN: JOHN FORGASH THE PATRIOT BUILDING 172 TUCKERTON ROAD MEDFORD, NJ 08055 PHONE: 609-678-6913

NO.	REVISION	DATE

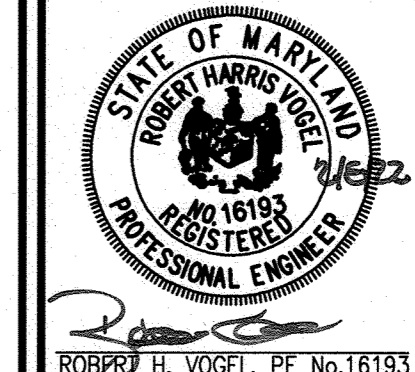
ENVIRONMENTAL CONCEPT PLAN LAYOUT PLAN

TEN OAKS SOLAR
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TAX MAP 34 BLOCK 11 5TH ELECTION DISTRICT
ZONED RR-DEO PARCEL 43 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

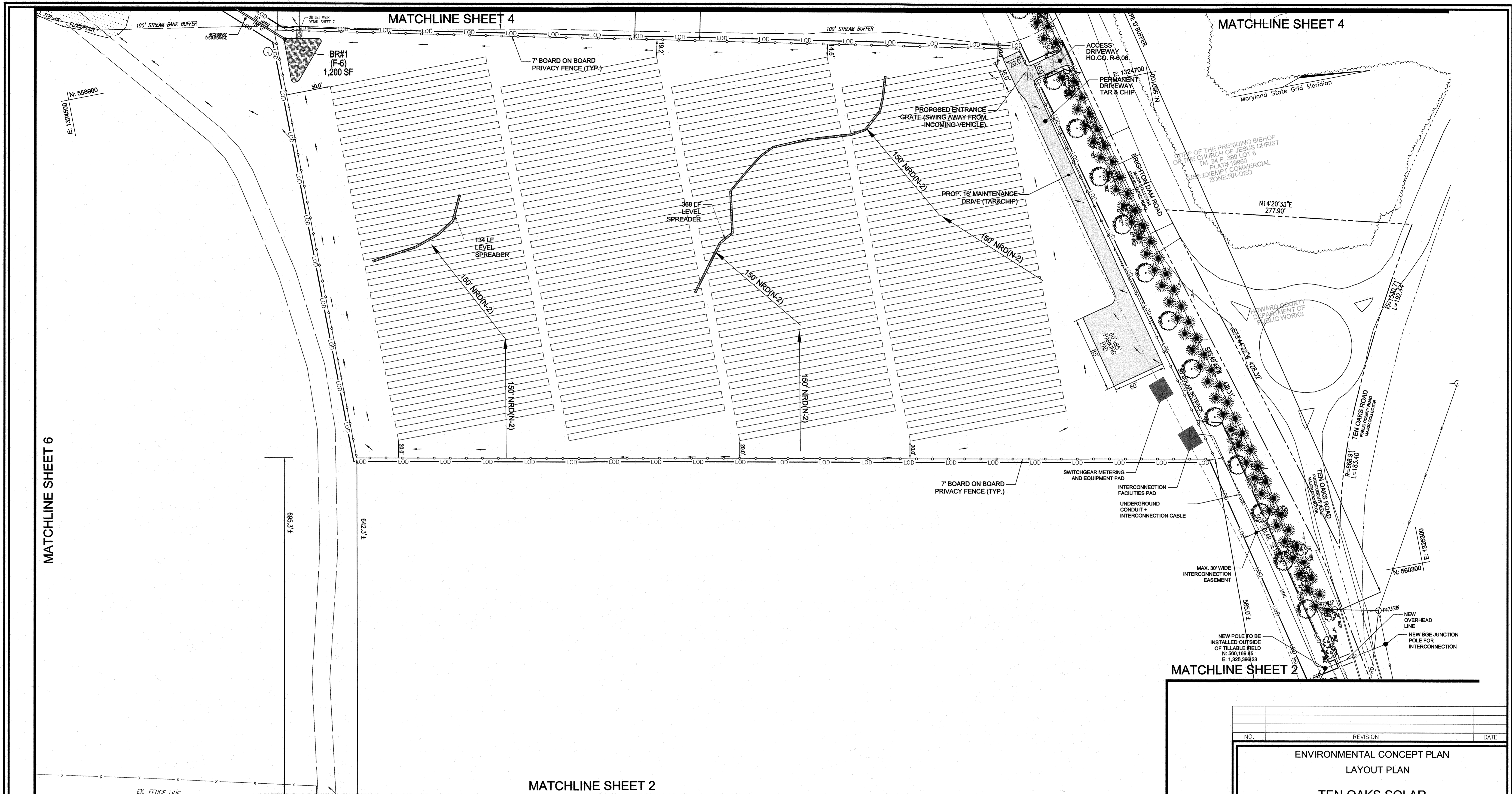
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com



PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 06-27-2022

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DRAWN BY: IMH
CHECKED BY: RHY
DATE: JANUARY 2022
SCALE: AS SHOWN
W.O. NO.: 46576



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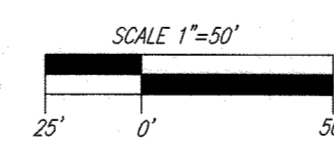
MATCHLINE SHEET 4

MATCHLINE SHEET 2

MATCHLINE SHEET 2

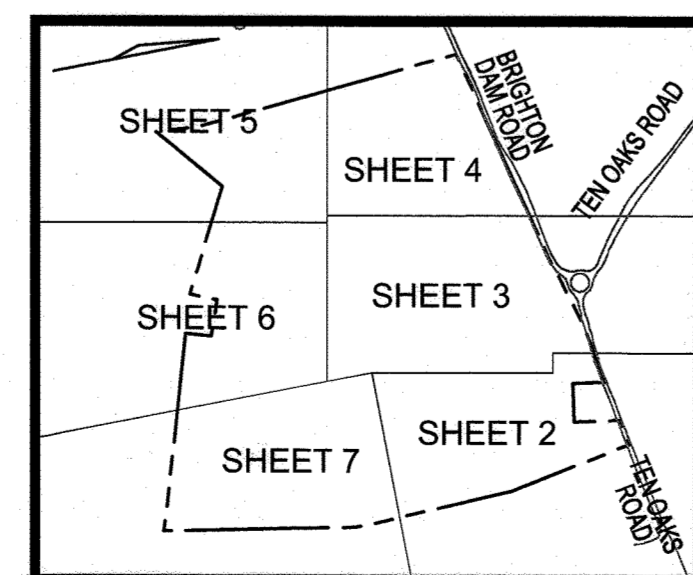
LAYOUT PLAN

SCALE: 1"=50'



LEGENDS:

- PARCEL BOUNDARY
- 50' SOLAR SETBACK
- STREAM CENTERLINE
- STREAM BUFFER
- EXISTING TREELINE
- x EXISTING FENCE
- UGC UNDERGROUND MEDIUM VOLTAGE
- NEW ACCESS ROAD



KEY MAP
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature]
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 3-17-22

[Signature]
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 3/22/22

OWNER
E. ALEXANDER AND BETTY SMITH ADAMS TRUSTEES OF THE RICHARD WARFIELD TRUST, 6096 KEYSER ROAD, HUME VA 22639 410-531-9655

DEVELOPER
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**ENVIRONMENTAL CONCEPT PLAN
LAYOUT PLAN**

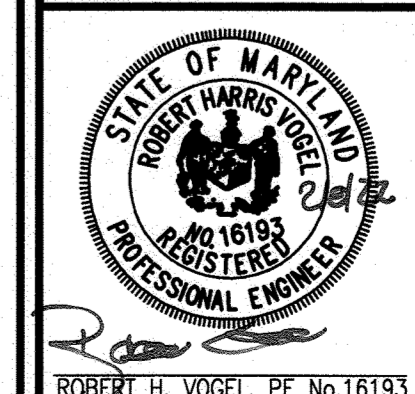
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TAX MAP 34 BLOCK 11 5TH ELECTION DISTRICT
ZONED RR-DEO PARCEL 43
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

TIMMONS GROUP

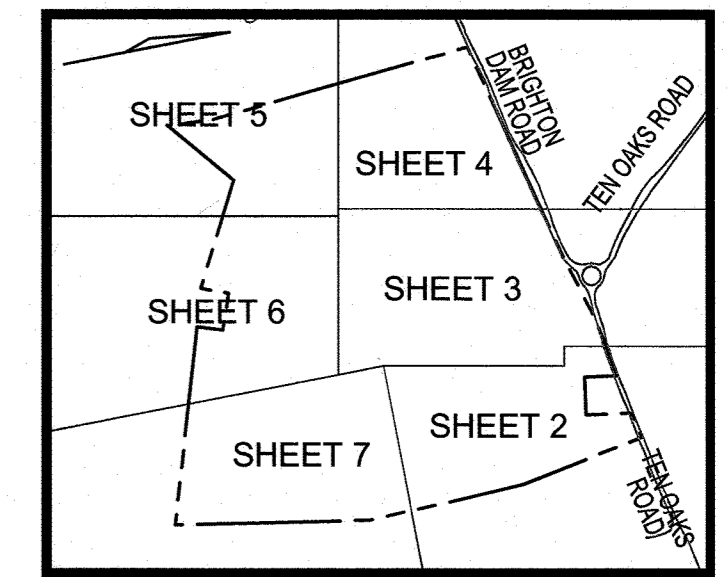
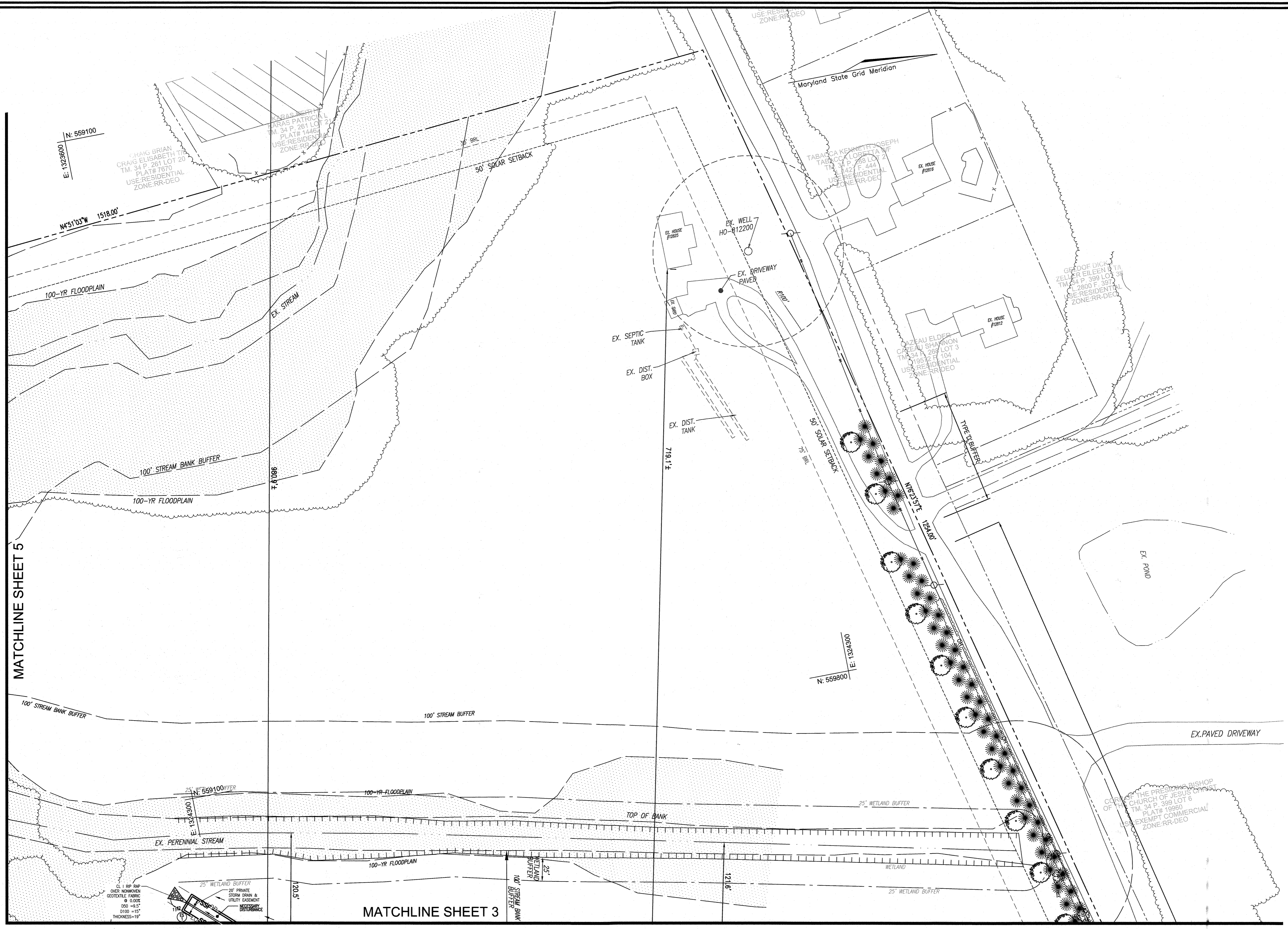
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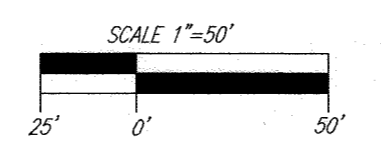


KEY MAP
NOT TO SCALE

MATCHLINE SHEET 5

MATCHLINE SHEET 3

LAYOUT PLAN
SCALE: 1"=50'



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3-17-22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] *[Signature]*
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

- LEGENDS:**
- PARCEL BOUNDARY
 - - - 50' SOLAR SETBACK
 - - - STREAM CENTERLINE
 - - - STREAM BUFFER
 - - - EXISTING TREELINE
 - x - - - EXISTING FENCE

OWNER
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DEVELOPER
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SOLHARVEST ENERGY
ATTN: JOHN FORGASH
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172 TUCKERTON ROAD
MEDFORD, NJ 08055
PHONE: 609-678-6911

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
LAYOUT PLAN

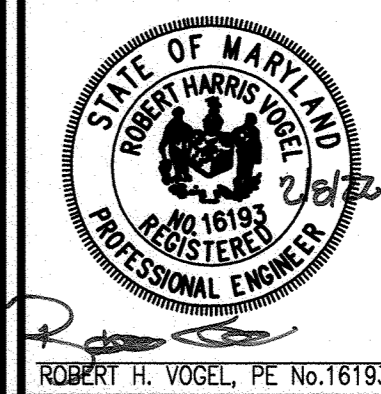
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DEED L. 14369 F. 464

TAX MAP 34 BLOCK 11 ZONED RR-DEO
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND PARCEL 4.3

VOGEL ENGINEERING

TIMMONS GROUP

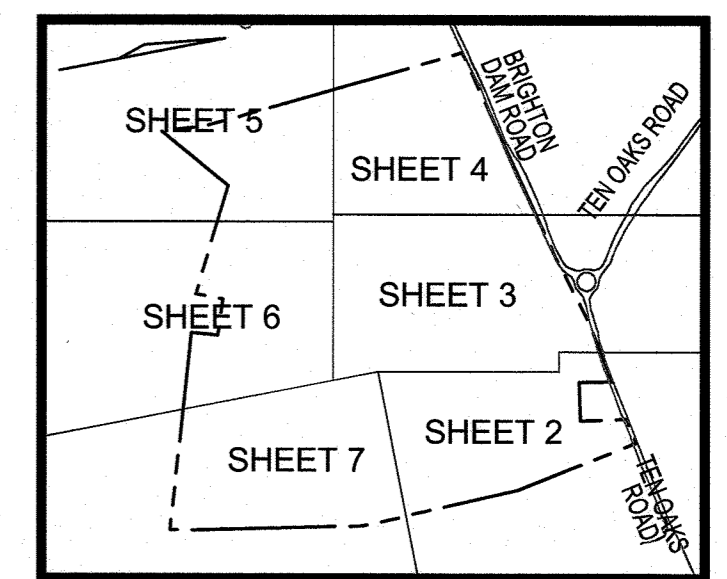
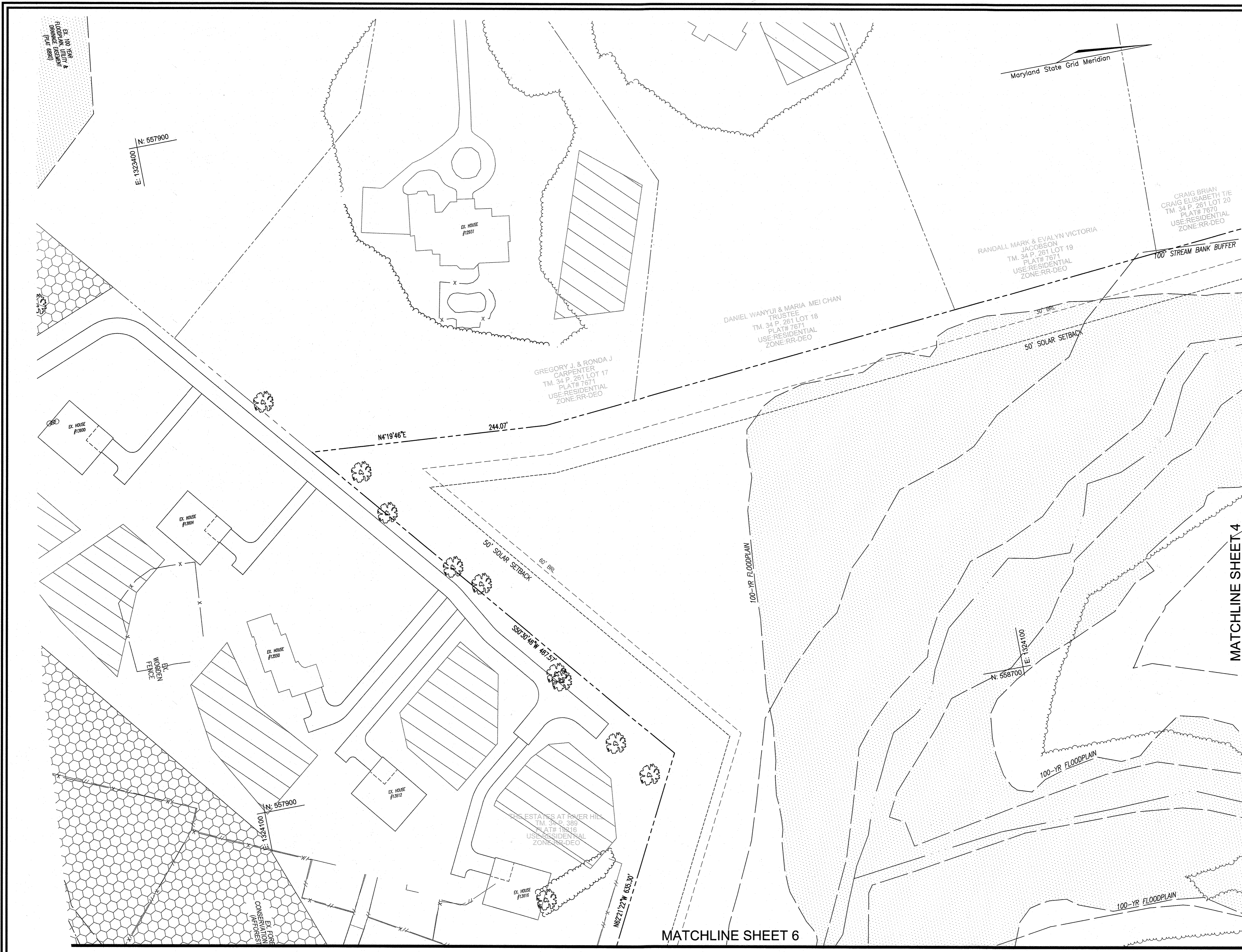
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4 SHEET OF 11



KEY MAP
NOT TO SCALE

MATCHLINE SHEET 4

MATCHLINE SHEET 6

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3-17-22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 2/24/22
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

LAYOUT PLAN
SCALE: 1"=50'

- LEGENDS:
- PARCEL BOUNDARY
 - - - 50' SOLAR SETBACK
 - STREAM CENTERLINE
 - STREAM BUFFER
 - EXISTING TREELINE
 - x EXISTING FENCE

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THE PATRIOT BUILDING
172 TUCKERTON ROAD
MEDFORD, NJ 08055
PHONE: 609-678-6911

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
LAYOUT PLAN

TEN OAKS SOLAR
6160 TEN OAKS ROAD, CLARKSVILLE, MD 21029
DEED L. 14369 F. 464

TAX MAP 34 BLOCK 11
5TH ELECTION DISTRICT

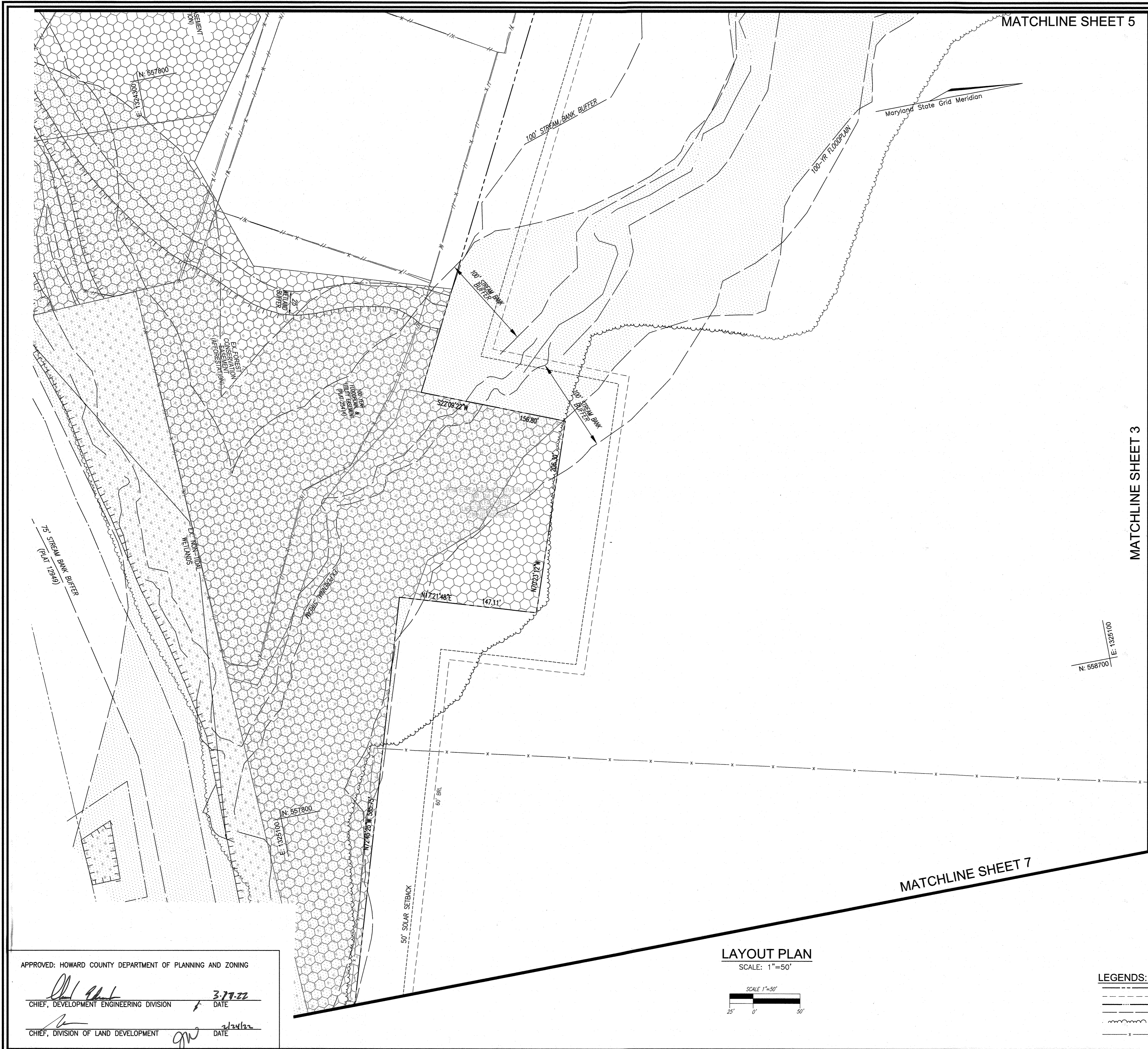
ZONED RR-DEO
PARCEL 43
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

TIMMONS GROUP

3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

	DESIGN BY: RHV	<p>PROFESSIONAL CERTIFICATE</p> <p>I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2022</p>
	DRAWN BY: IMH	
	CHECKED BY: RHV	
	DATE: JANUARY 2022	
SCALE: AS SHOWN	W.O. NO.: 46576	5 OF 11

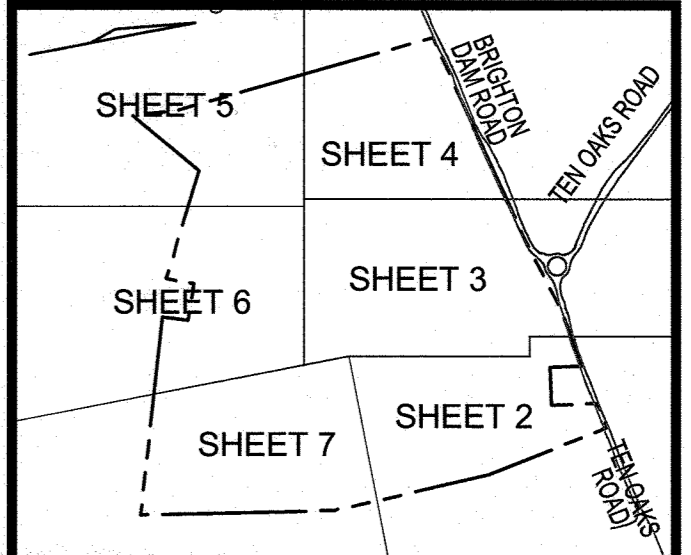


LAYOUT PLAN
SCALE: 1"=50'

- LEGENDS:**
- PARCEL BOUNDARY
 - 50' SOLAR SETBACK
 - STREAM CENTERLINE
 - STREAM BUFFER
 - EXISTING TREELINE
 - x--- EXISTING FENCE

OWNER
E. ALEXANDER AND BETTY SMITH ADAMS TRUSTEES OF THE RICHARD WARFIELD TRUST, 6096 KEYSER ROAD, HUME VA 22639 410-531-9655

DEVELOPER
TEN OAKS SOLAR LLC
SOLHARVEST ENERGY
ATTN: JOHN FORGASH
THE PATRIOT BUILDING
172 TUCKERTON ROAD
MEDFORD, NJ 08055
PHONE: 609-678-6911



KEY MAP
NOT TO SCALE

NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN
LAYOUT PLAN**

TEN OAKS SOLAR

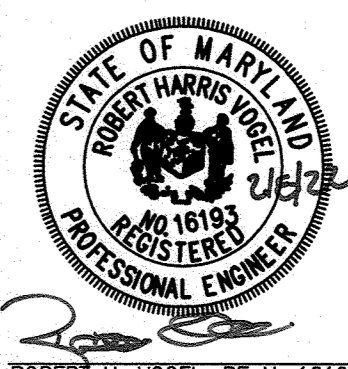
6160 TEN OAKS ROAD, CLARKSVILLE, MD 21029
DEED L.14369 F.464

TAX MAP 34 BLOCK 11 5TH ELECTION DISTRICT
ZONED BR-DEO PARCEL 4.3
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

TIMMONS GROUP

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DRAWN BY: IMH
CHECKED BY: RHV
DATE: JANUARY 2022
SCALE: AS SHOWN
W.O. NO.: 46576

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

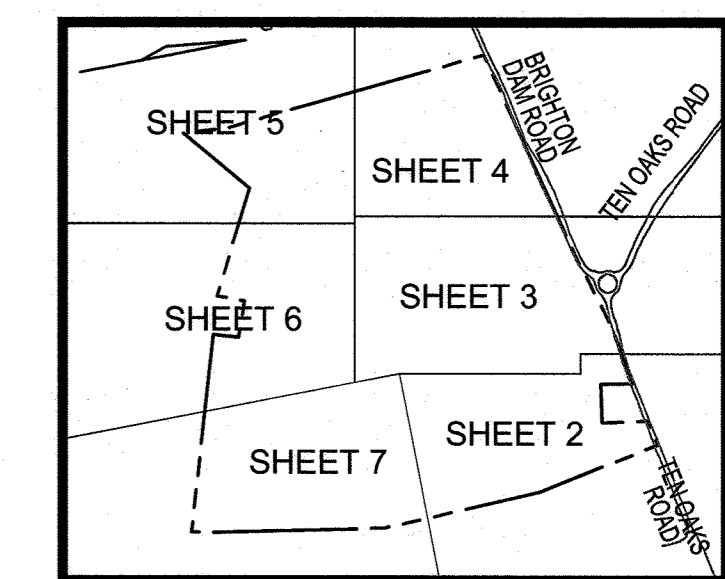
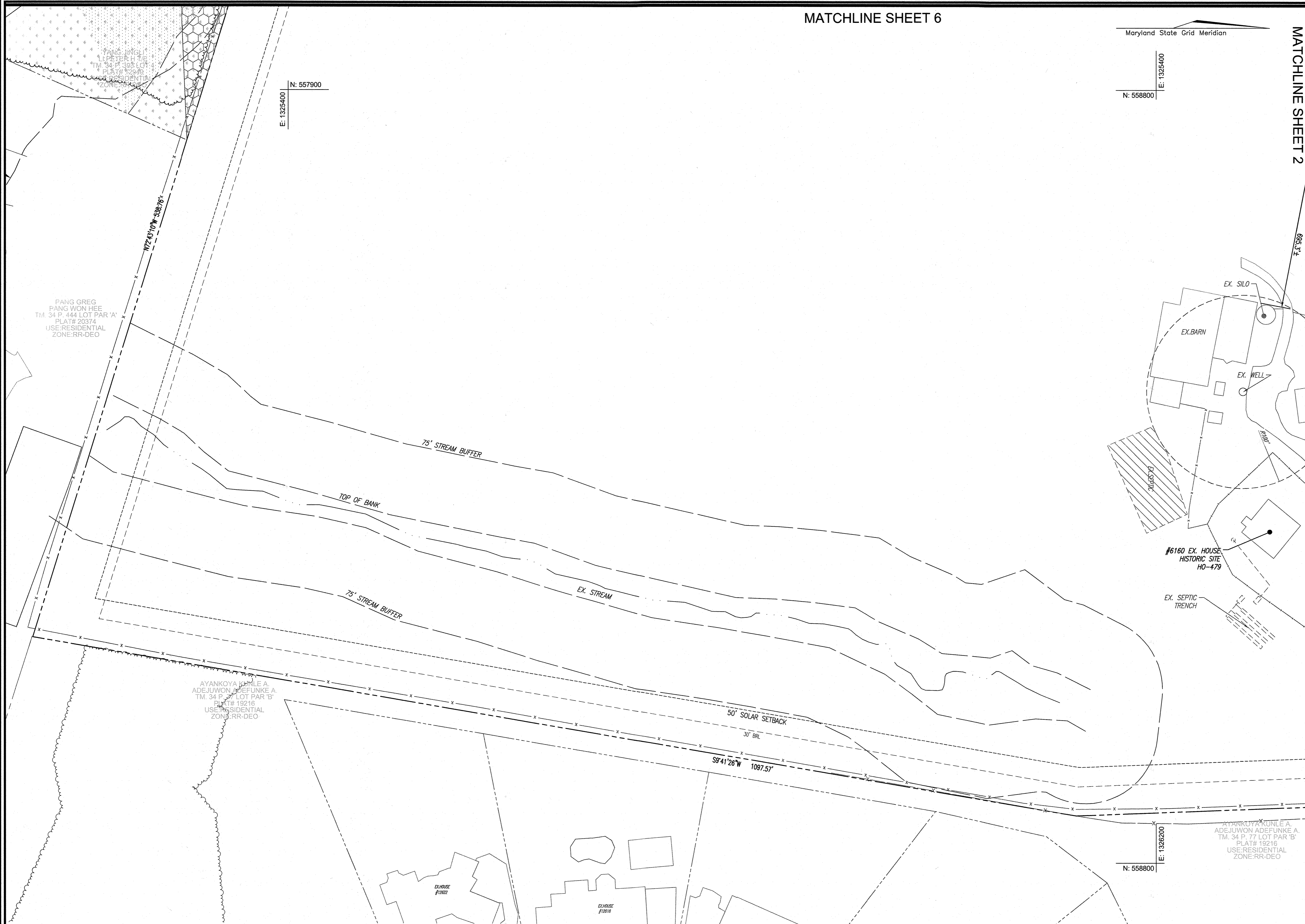
[Signature] 3-7-22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 2/24/22
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Maryland State Grid Meridian

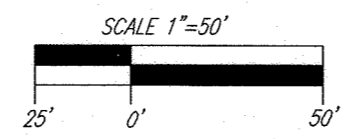
E: 1325400
N: 557900

MATCHLINE SHEET 2



KEY MAP
NOT TO SCALE

LAYOUT PLAN
SCALE: 1"=50'



NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
LAYOUT PLAN
TEN OAKS SOLAR
6160 TEN OAKS ROAD, CLARKSVILLE, MD 21029
DEED L.14369 F.464 ZONED RR-DEO PARCEL 43
TAX MAP 34 BLOCK 11 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

OWNER
E. ALEXANDER AND BETTY SMITH ADAMS TRUSTEES OF THE RICHARD WARFIELD TRUST, 6096 KEYSER ROAD, HUME VA 22639 410-531-9655

DEVELOPER
TEN OAKS SOLAR LLC SOLHARVEST ENERGY ATTN: JOHN FORGASH THE PATRIOT BUILDING 172 TUCKERTON ROAD MEDFORD, NJ 08055 PHONE: 609-678-6911

LEGENDS:
 - - - - - PARCEL BOUNDARY
 - - - - - 50' SOLAR SETBACK
 - - - - - STREAM CENTERLINE
 - - - - - STREAM BUFFER
 - - - - - EXISTING TREELINE
 - - - - - EXISTING FENCE

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18163 EXPIRATION DATE 09-27-2022

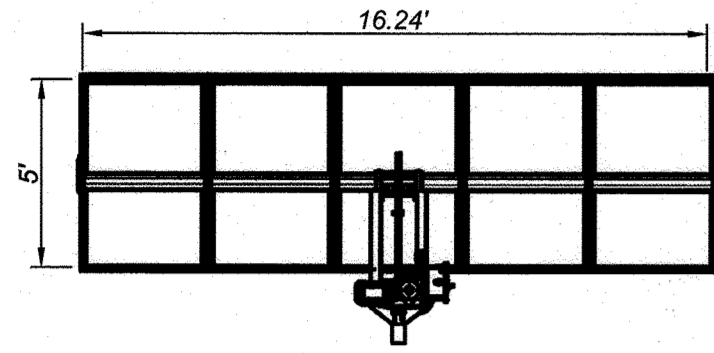
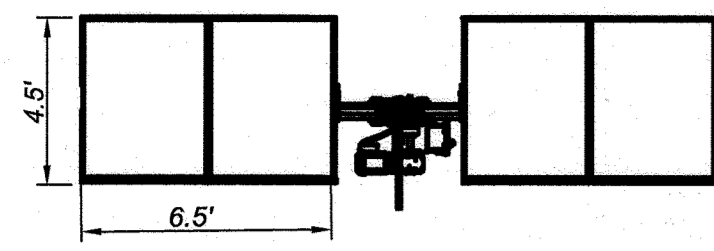
DESIGN BY: RHV
 DRAWN BY: IMH
 CHECKED BY: RHV
 DATE: JANUARY 2022
 SCALE: AS SHOWN
 W.O. NO.: 45576

7 SHEET OF 11

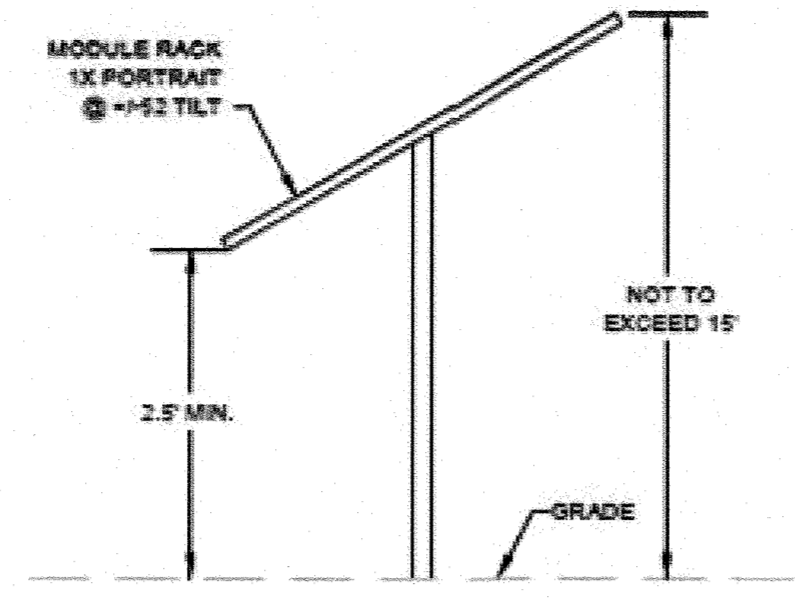
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3.17.22
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 3/17/22
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

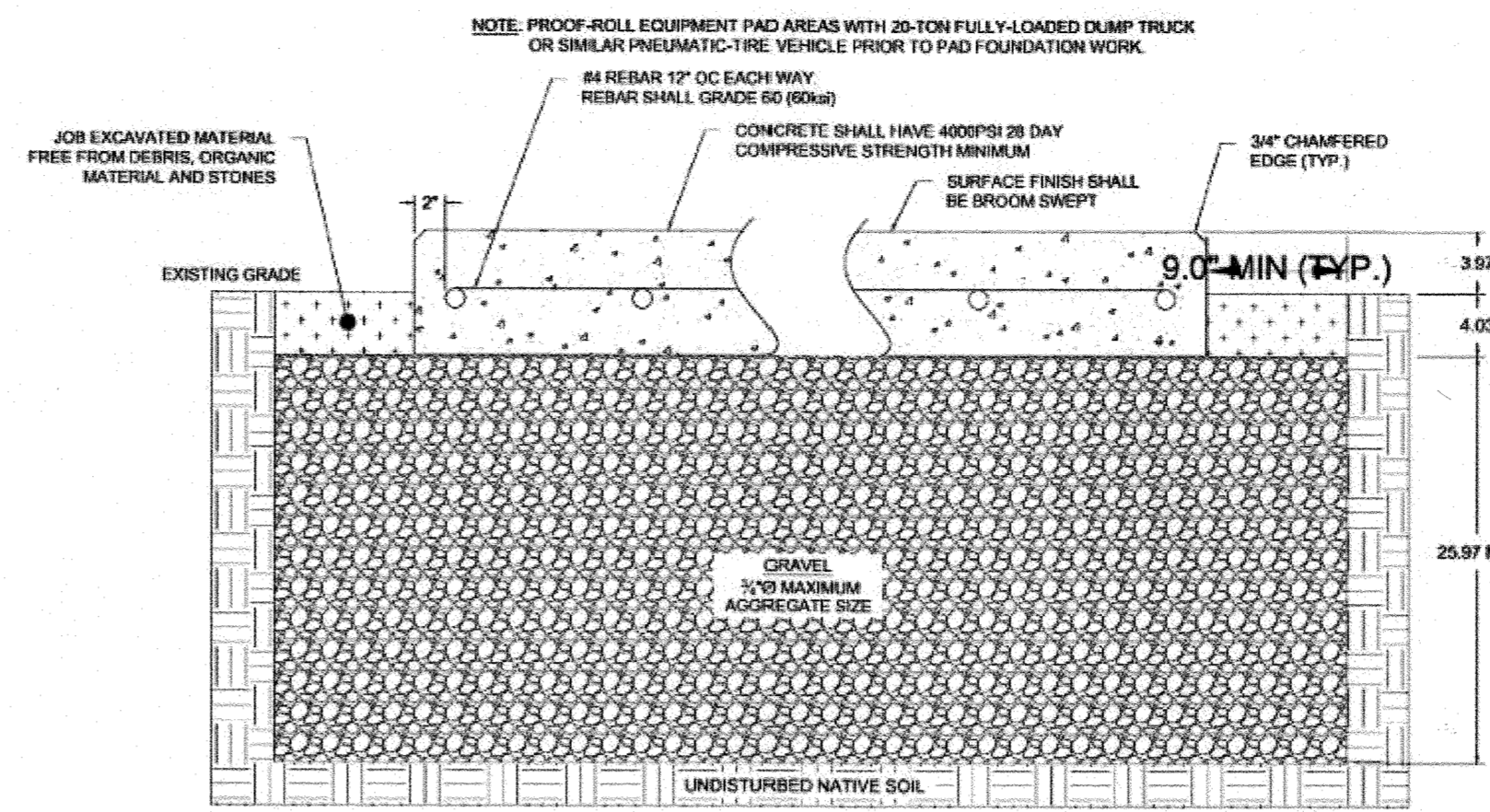


SOLAR PANEL DETAIL
SINGLE AXIS TRACKER
NO SCALE



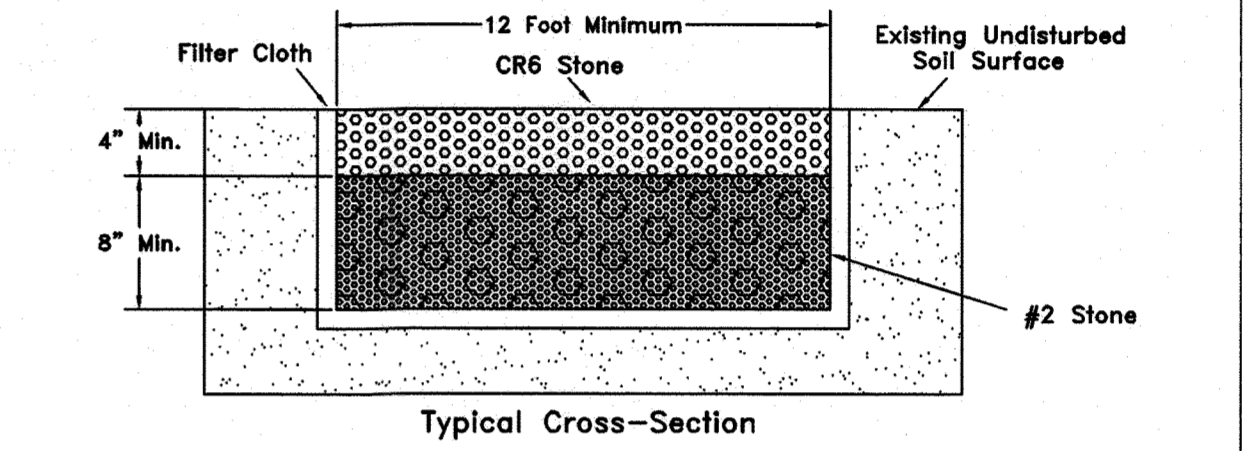
STANDARD SOLAR ARRAY RACK DETAIL
NOT TO SCALE

THE PROPOSED LAYOUT OF THE SOLAR PANELS AND THE EXISTING GRADUAL SLOPES BELOW THE PANELS ALLOW THE DISCONNECTION OF NON-ROOFTOP RUNOFF TECHNIQUE TO ADDRESS THE STORMWATER MANAGEMENT REQUIREMENTS FOR THIS PROJECT.

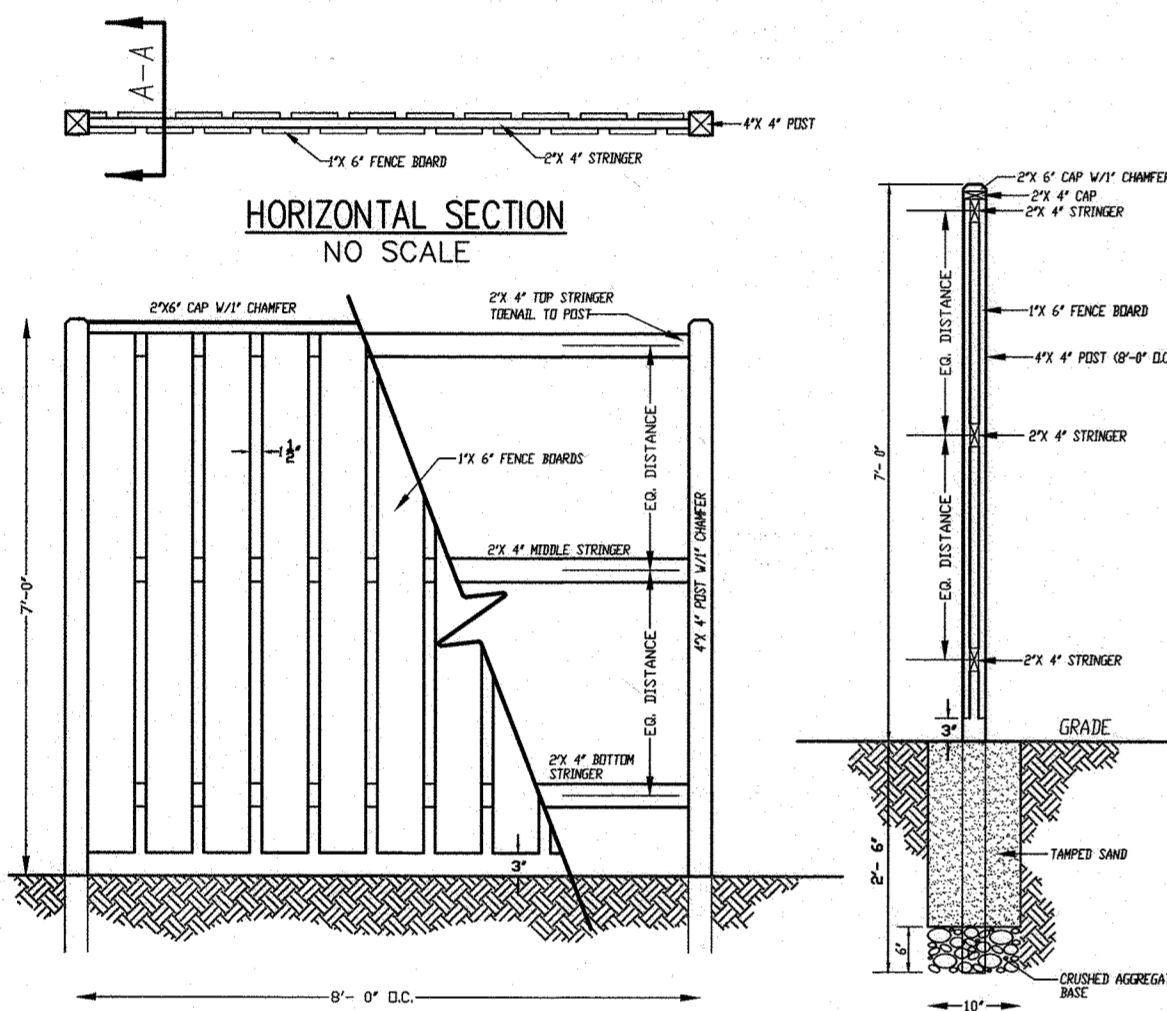


SWITCHGEAR PAD DETAIL
NOT TO SCALE

- An access road is defined to be a stone-base road with entry off of a paved street or highway. It is used to permit construction and maintenance vehicles access to an isolated location of pad-mounted equipment.
- The following guidelines should be used to design such a road.
1. An access road shall be constructed to H-20 highway loading with a maximum of 8% grade. Wherever possible, the access road should be straight without curves, and be a minimum of 12' wide. The location and plans for the access road must be approved by BGE prior to construction.
 2. The access road shall extend a minimum of 20' from the public highway to the pad-mounted equipment, unless separated by guardrails or Jersey walls. This distance allows sufficient length for the vehicle operator to park away from the flow of traffic off the public highway.
 3. At the location of the pad-mounted equipment, the roadway shall widen to allow construction and maintenance trucks an area to turn around when exiting the site. This widened area shall be a minimum of 20' x 20'.
 4. The roadway shall be excavated to a minimum depth of 12" and constructed of two layers of stone. Before the first layer is installed, the bottom and sides of the excavated roadway shall be lined with non-woven filter cloth.
 5. The base layer shall be a minimum of 8" of #2 stone. The top layer shall be a minimum of 4" of CR6 stone. The top layer of the roadway shall be at "grade." These minimum depths may have to be increased depending on the existing soil conditions to obtain the H-20 highway loading.
 6. Curbs and gutters are not required.
 7. Guard rails should be installed when the slope of the road is steeper than a 3:1 ratio.
 8. If the access road is gated, BGE must have Independent 24-hour admittance, i.e. double locks.

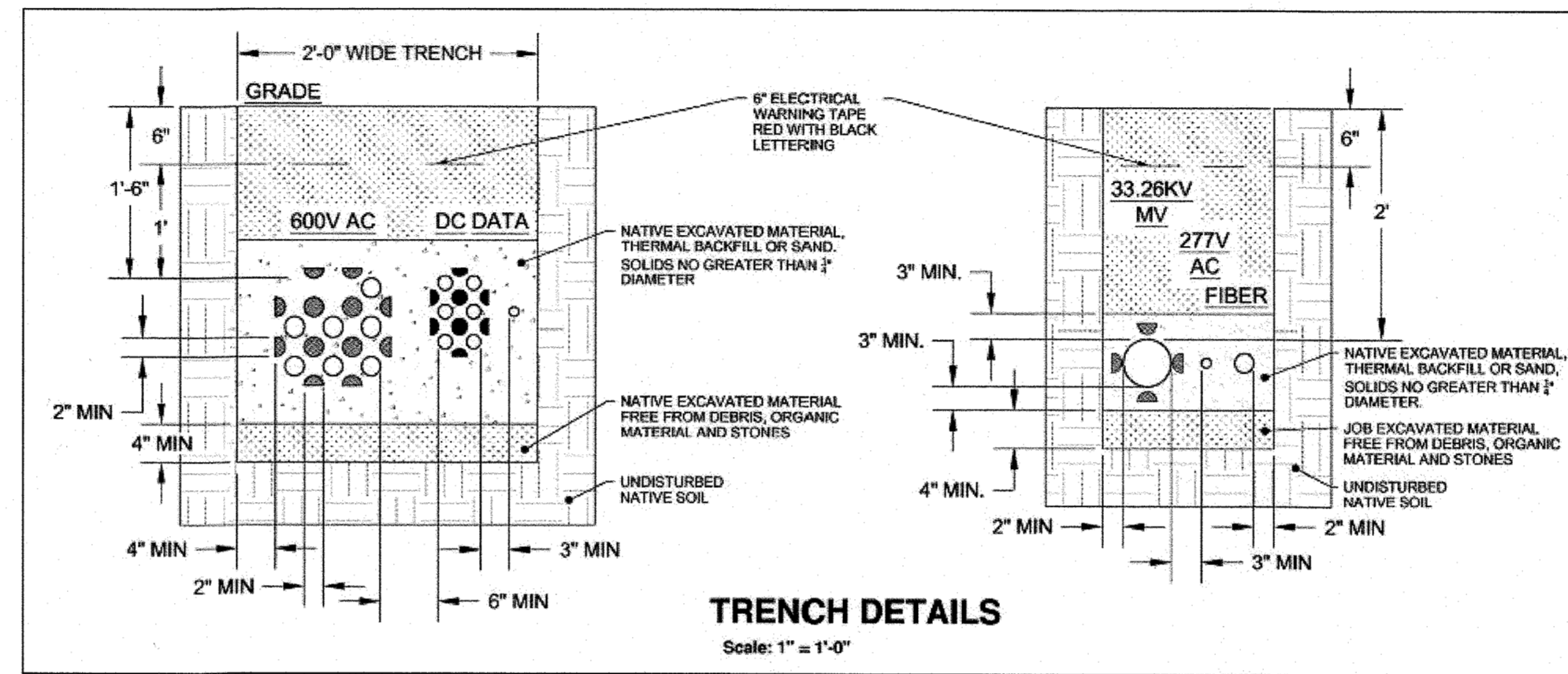


BGE UNDERGROUND CONSTRUCTION STANDARDS
LATEST REVISION: APP. DATE: 12/21/10 APPROVAL: *Cmm*



WOODEN FENCE DETAIL (ELEVATION)
NO SCALE

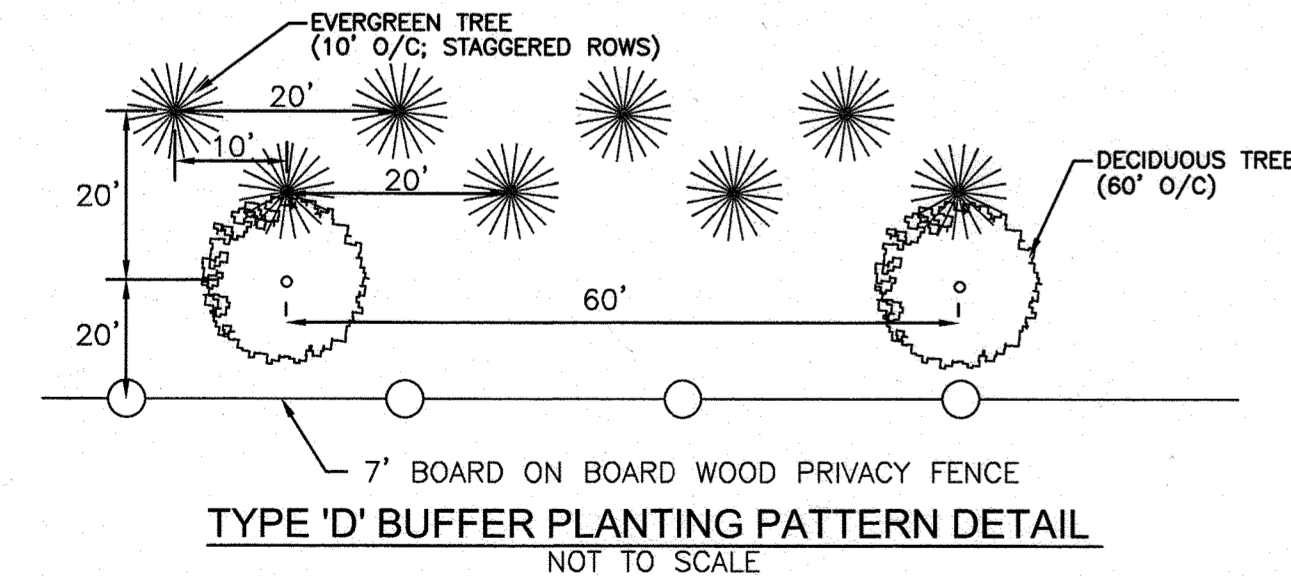
SECTION A-A
NO SCALE



TRENCH DETAILS
Scale: 1" = 1'-0"

NOTES:

1. FENCE ALONG ALL SIDES OF THE SOLAR FACILITY SHALL BE BOARD ON BOARD WOOD PRIVACY FENCE INSTALLED AT A MINIMUM OF 7' IN HEIGHT.
2. TYPE 'D' BUFFER TREES SHALL CONSIST OF A DOUBLE ROW OF EVERGREEN TREES PLANTED AT INTERVALS OF 10' ON CENTER; ROWS OFFSET 15'; AND DECIDUOUS TREES PLANTED AT 60' ON CENTER.
3. EVERGREEN TREE SPECIES MAY INCLUDE:
 - a. ILEX OPECA / AMERICAN HOLLY (5'-6' HGT.)
 - b. PINUS STROBUS / EASTERN WHITE PINE (6'-8' HGT.)
 - c. CYPRESS OCYPARIS LEYLAND / LEYLAND CYPRESS (5'-6' HGT.)
4. DECIDUOUS TREE SPECIES MAY INCLUDE:
 - a. ACER GINNALA / AKUR MAPLE (1-1/2" - 2" CAL.)
 - b. ACER RUBRUM / OCTOBER GLORY RED MAPLE (2-1/2" - 3" CAL.)
 - c. BETULA NIGRA 'HERITAGE' / HERITAGE CLUMP BIRCH (10'-12' HGT.)
5. OTHER LANDSCAPE SPECIES MAY BE APPROVED WITH APPROVAL OF HOWARD COUNTY.
6. TYPE 'D' BUFFER ALONG TEN OAKS ROAD AND BRIGHTON DAM ROAD TO MEET BGE LOCATION AND SPECIES GUIDELINES.



TYPE 'D' BUFFER PLANTING PATTERN DETAIL
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

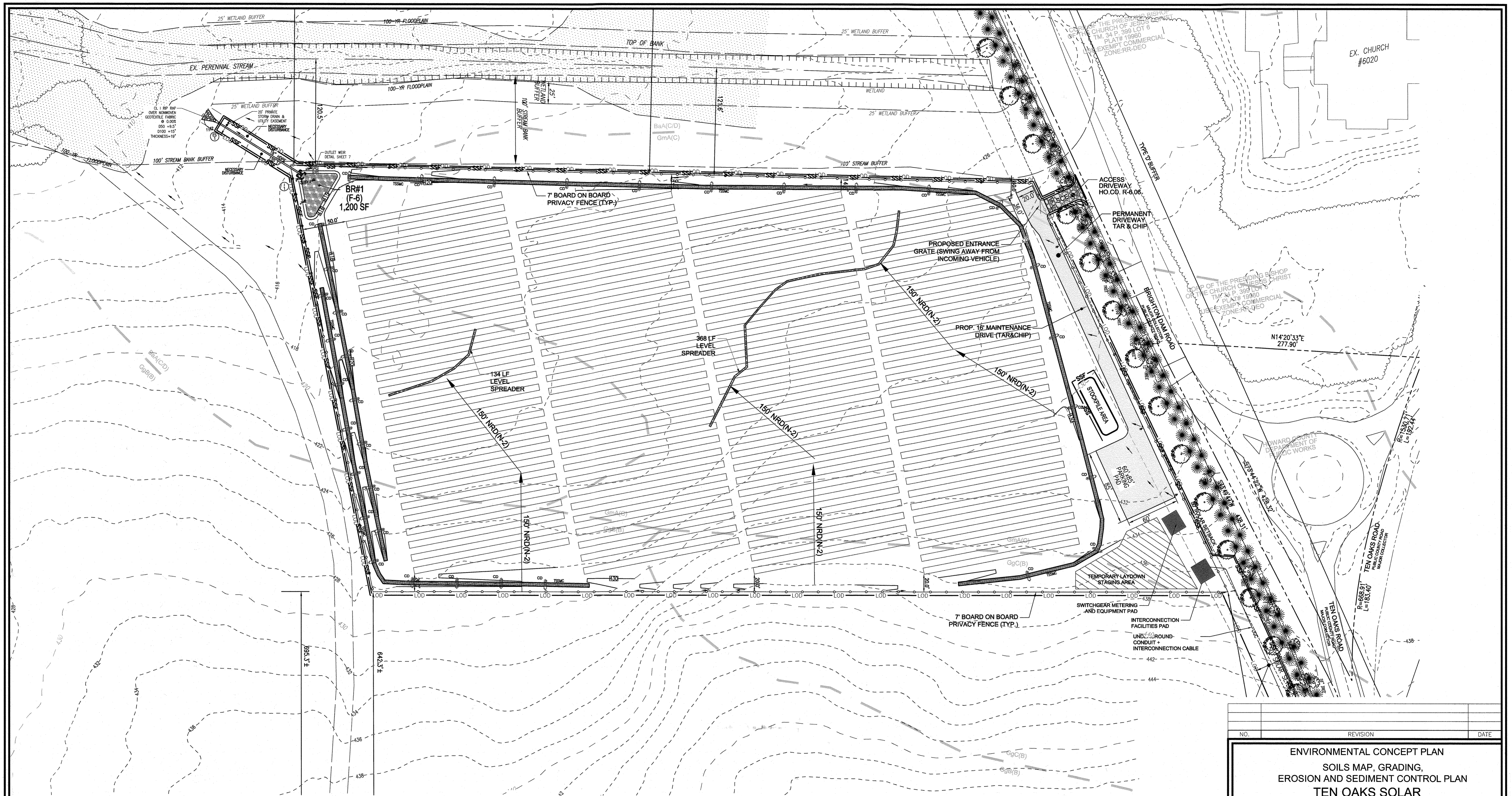
[Signature] 3-17-22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] *[Signature]*
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

OWNER
E. ALEXANDER AND BETTY SMITH ADAMS TRUSTEES OF THE RICHARD WARFIELD TRUST, 6096 KEYSER ROAD, HUME VA 22639 410-531-9655

DEVELOPER
TEN OAKS SOLAR LLC SOLHARVEST ENERGY ATTN: JOHN FORGASH THE PATRIOT BUILDING 172 TUCKERTON ROAD MEDFORD, NJ 08055 PHONE: 609-678-6911

NO.	REVISION	DATE
ENVIRONMENTAL CONCEPT PLAN		
SITE DETAILS		
TEN OAKS SOLAR		
6160 TEN OAKS ROAD, CLARKSVILLE, MD 21029		
DEED L.14369 F.464		
TAX MAP 34 BLOCK 11	5TH ELECTION DISTRICT	ZONED RE-DEO PARCEL 4 HOWARD COUNTY, MARYLAND
VOGEL ENGINEERING		
TIMMONS GROUP		
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043 P: 410.461.7666 F: 410.461.8961 www.timmons.com		
	DESIGN BY: RHY	PROFESSIONAL CERTIFICATE I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 10-27-2022.
	DRAWN BY: IMH	
	CHECKED BY: RHY	
	DATE: JANUARY 2022	
SCALE: AS SHOWN	W.O. NO.: 46576	8 SHEET OF 11



NOTE:
 1. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE IN DITCHES AFTER CONSTRUCTION OF SOLAR ARRAY.
 2. CONTRACTOR SHALL MAINTAIN THAT RUNOFF IS DIRECTED TO THE MICRO-BIORETENTION FACILITY.

SOILS LEGEND					
SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	ERODIBLE	HYDRIC
Ba	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	C/D	0.49	NO	YES
GgB	GLENELG LOAM, 3 TO 8 PERCENT SLOPES	B	0.32	NO	NO
GgC	GLENELG LOAM, 8 TO 15 PERCENT SLOPES	B	0.32	NO	NO
GmA	GLENVILLE SILT LOAM, 0 TO 3 PERCENT SLOPES	C	0.49	NO	YES

SOILS NOTE:
 HIGHEST ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.

NOTE:
 - SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
 - SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART
 - DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

NOTES:
 1. APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED BUILDING AND/OR GRADING PERMIT.
 2. REVIEW OF THIS PLAN FOR COMPLIANCE WITH ZONING AND SUBDIVISION AND SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SHALL OCCUR AT THE FINAL PLAN AND SITE DEVELOPMENT PLAN STAGES, AND THEREFORE, THIS PLAN IS SUBJECT TO ADDITIONAL AND MORE DETAILED COMMENTS AS THE PLAN PROGRESSES THROUGH THE PERMIT PROCESS.
 3. THERE ARE NO ENVIRONMENTAL FEATURES: FLOODPLAIN, WETLANDS, STREAMS, STEEP SLOPES OR FOREST THAT EXISTS WITHIN THE PROPOSED LIMIT OF DISTURBANCE.

HSCD NOTES:
 APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME.

1. THE SITE DEVELOPMENT PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING.
 2. TEMPORARY STORMWATER MANAGEMENT IS NOT REQUIRED FOR THIS PROJECT.
 3. THE SITE DEVELOPMENT PLAN SUBMISSION SHALL PROVIDE A DRAINAGE AREA MAP SPECIFIC TO CHOSEN SEDIMENT CONTROLS.
 4. THE SITE DEVELOPMENT PLAN SUBMISSION SHALL PROVIDE COMPUTATIONS TO VERIFY VELOCITIES ALONG DIKES, SWALES AND AT DIKES OUTLET LOCATIONS.

LEGENDS:	
---	PARCEL BOUNDARY
---	50' SOLAR SETBACK
---	STREAM CENTERLINE
---	STREAM BUFFER
---	EXISTING CONTOUR (10')
---	EXISTING CONTOUR (2')
---	SOILS BOUNDARY
---	EXISTING TREELINE
---	UNDERGROUND MEDIUM VOLTAGE
---	TRANSFORMER PAD
---	PROPOSED FENCE
---	LIMIT OF DISTURBED AREA
---	SUPER SILT FENCE
---	SILT FENCE
---	NEW ACCESS ROAD
---	ERODIBLE SOILS
---	100-YR FLOODPLAIN
---	PROPOSED CONTOUR (10')
---	PROPOSED CONTOUR (2')

SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1"=50'
 SCALE 1"=50'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 3-17-22
 [Signature]
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: [Signature]

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
 SOILS MAP, GRADING,
 EROSION AND SEDIMENT CONTROL PLAN
TEN OAKS SOLAR
 6160 TEN OAKS ROAD, CLARKSVILLE, MD 21029
 DEED L. 14369 F. 464
 ZONED RR-DEO PARCEL 4.3
 HOWARD COUNTY, MARYLAND

TAX MAP 34 BLOCK 11
 5TH ELECTION DISTRICT

VOGEL ENGINEERING
 TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

OWNER
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 410-531-9655

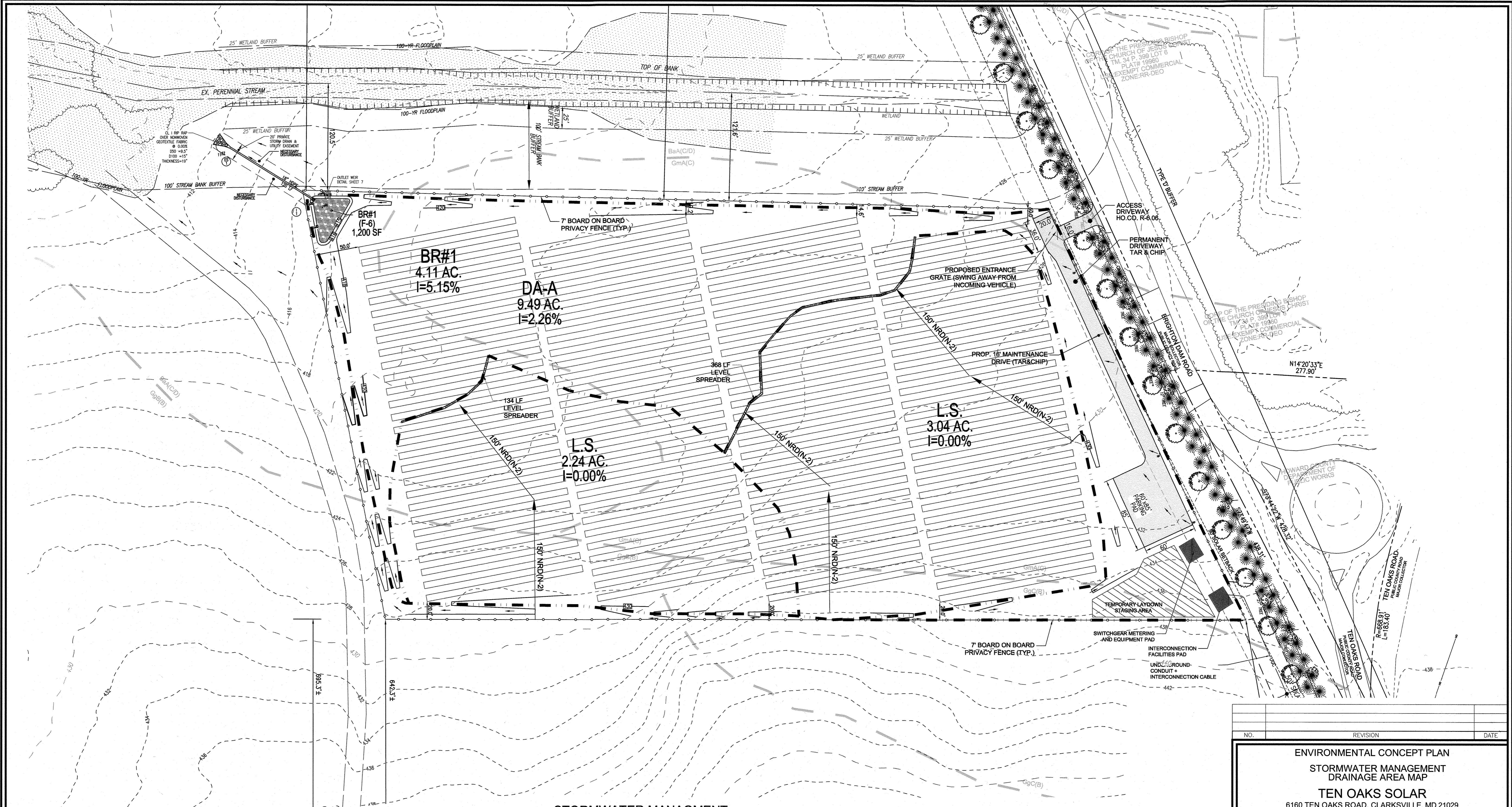
DEVELOPER
 TEN OAKS SOLAR LLC
 SOLHARVEST ENERGY
 ATTN: JOHN FORGASH
 THE PATRIOT BUILDING
 172 TUCKERTON ROAD
 MEDFORD, NJ 08055
 PHONE: 609-678-6911

DESIGN BY: RHV
 DRAWN BY: IMH
 CHECKED BY: RHV
 DATE: JANUARY 2022
 SCALE: AS SHOWN
 W.O. NO.: 46576

STATE OF MARYLAND
 ROBERT H. VOGEL, PE No. 16193
 PROFESSIONAL ENGINEER

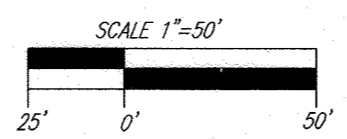
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9 SHEET OF 11



**STORMWATER MANAGMENT
DRAINAGE AREA MAP**

SCALE: 1"=50'



- LEGENDS:**
- PARCEL BOUNDARY
 - 50' SOLAR SETBACK
 - STREAM CENTERLINE
 - STREAM BUFFER
 - 610- EXISTING CONTOUR (10')
 - 608- EXISTING CONTOUR (2')
 - SOILS BOUNDARY
 - EXISTING TREELINE
 - UGC UNDERGROUND MEDIUM VOLTAGE
 - TRANSFORMER PAD
 - PROPOSED FENCE
 - NEW ACCESS ROAD
 - ERODIBLE SOILS
 - 100-YR FLOODPLAIN
 - PROPOSED CONTOUR (10')
 - PROPOSED CONTOUR (2')
 - DRAINAGE AREA
 - BIORETENTION (F-6)

OWNER
E. ALEXANDER AND BETTY SMITH ADAMS TRUSTEES OF THE RICHARD WARFIELD TRUST, 6096 KEYSER ROAD, HUME VA 22639 410-531-9655

DEVELOPER
TEN OAKS SOLAR LLC SOLHARVEST ENERGY ATTN: JOHN FORGASH THE PATRIOT BUILDING 172 TUCKERTON ROAD MEDFORD, NJ 08055 PHONE: 609-678-6911

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3/17/22
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 3/24/22
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

NO.	REVISION	DATE
ENVIRONMENTAL CONCEPT PLAN STORMWATER MANAGEMENT DRAINAGE AREA MAP TEN OAKS SOLAR 6160 TEN OAKS ROAD, CLARKSVILLE, MD 21029 DEED L.14369 F.464		
TAX MAP 34 BLOCK 11 5TH ELECTION DISTRICT		ZONED RR-DEO PARCEL 43 HOWARD COUNTY, MARYLAND
VOGEL ENGINEERING TIMMONS GROUP 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043 P: 410.461.7666 F: 410.461.8961 www.timmons.com		
PROFESSIONAL CERTIFICATE		
DESIGN BY: RHV	I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183, EXPIRATION DATE: 06-27-2022	
DRAWN BY: IMH		
CHECKED BY: RHV		
DATE: JANUARY 2022		
SCALE: AS SHOWN		
W.O. NO.: 46576		
		10 SHEET OF 11

N-2. DISCONNECTION OF NON ROOFTOP RUNOFF

CONSTRUCTION CRITERIA:

THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING THE CONSTRUCTION OF PROJECTS WITH PLANNED ROOFTOP DISCONNECTIONS:

- EROSION AND SEDIMENT CONTROL: EROSION AND SEDIMENT CONTROL PRACTICES (E.G., SEDIMENT TRAPS) SHALL NOT BE LOCATED IN VEGETATED AREAS RECEIVING DISCONNECTED RUNOFF
- SITE DISTURBANCE: CONSTRUCTION VEHICLES AND EQUIPMENT SHOULD AVOID AREAS RECEIVING DISCONNECTED RUNOFF TO MINIMIZE DISTURBANCE AND COMPACTION. SHOULD AREAS RECEIVING DISCONNECTED RUNOFF BECOME COMPACTED, SCARPING THE SURFACE OR ROTOTILLING THE SOIL TO A DEPTH OF FOUR TO SIX INCHES SHALL BE PERFORMED TO ENSURE PERMEABILITY. ADDITIONALLY, AMENDMENTS MAY BE NEEDED FOR TIGHT, CLAYEY SOILS.

INSPECTION:
A FINAL INSPECTION SHALL BE CONDUCTED BEFORE USE AND OCCUPANCY APPROVAL TO ENSURE THAT SIZING FOR TREATMENT AREAS HAS BEEN MET AND PERMANENT STABILIZATION HAS BEEN ESTABLISHED.

MAINTENANCE CRITERIA:

MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE COMPACTION (E.G., BY PLANTING TREES OR SHRUBS ALONG THE PERIMETER). IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF NON ROOFTOP RUNOFF (N-2)

A. MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING RUNOFF ARE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.

APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS

1. MATERIAL SPECIFICATIONS

THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

2. FILTERING MEDIA OR PLANTING SOIL
THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR COMPACTED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVIDE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:
* SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURE CLASSIFICATION).
* ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
* CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
* PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.
THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL, IF TOPSOIL IS IMPORTED. THEN A TEXTURAL ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

3. COMPACTION
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.
COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONES. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOFILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOFILLING) BASE. WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOFILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

5. PLANT INSTALLATION

COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL KEPT (6 TO 12 MONTHS) FOR ACCEPTANCE.
ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED 3/8" OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE GRADED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL. GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLANTS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS. THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOFILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
* PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 758, TYPE PS 28, OR AASHTO M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HOPE).
* PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4#4) GALVANIZED HARDWARE CLOTH.
* GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
* THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
* A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT POINT AND MONITOR PERFORMANCE OF THE FILTER.
* A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES IN TO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".
THIS MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

7. MISCELLANEOUS

THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

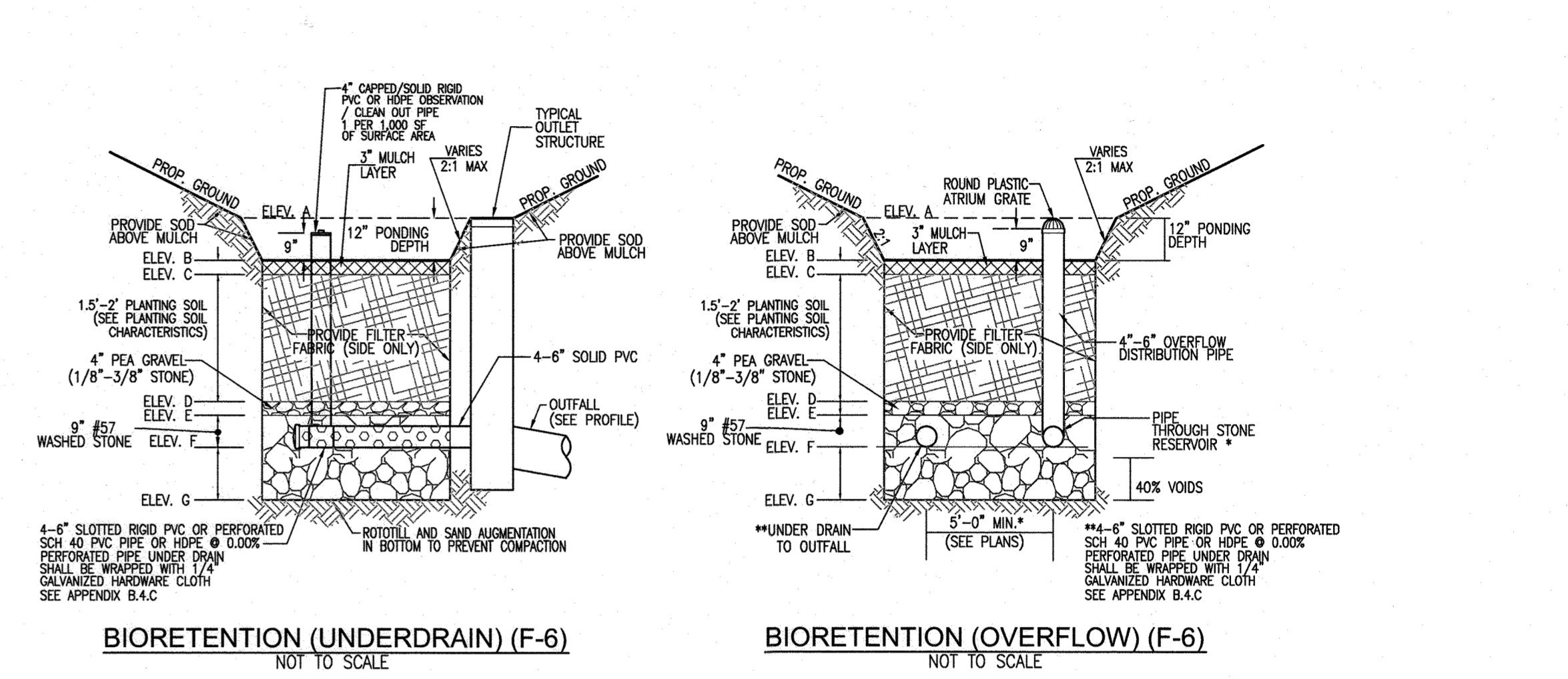
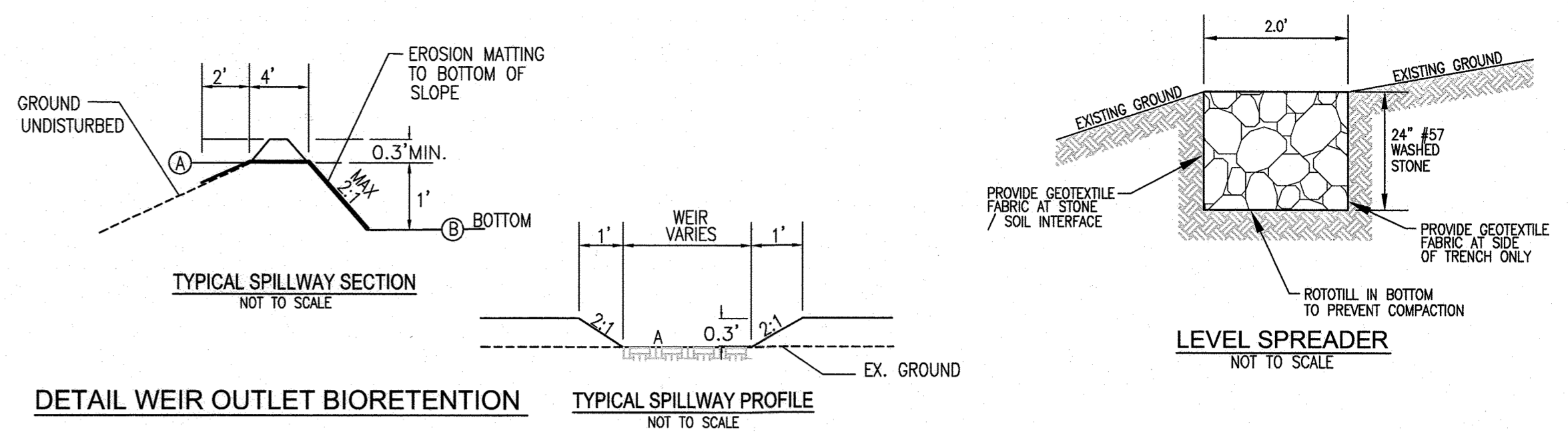
OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6) AND BIORETENTION (F-6)

1. THE OPERATOR SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL. PRUNING, ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE A.4.1 AND 2.
2. THE OPERATOR SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OPERATOR SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
3. THE OPERATOR SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
4. THE OPERATOR SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 3-17-22
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 2/24/22

Drainage #	% IMPERV	Rv	DA (SF)	DA (AC)	VOLUME	MAXIMUM VOLUME	PROVIDED VOLUME	Rev REQUIRED	Rev PROVIDED	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
SITE AREA: 10.07 AC													
TARGET Pe: 1.00 IN													
SITE IMPERVIOUS: 2.11 PERCENT													
SITE Rv: 0.0690													
SITE ESDv: (Required) 2522 cu.ft.													
Rev: (Required) 348 cu.ft.													
Rv=0.05+0.005R													
Pe min=1.0"-rainfall (1.0x0.95xR)/12													
Pe max=1yr rainfall=2.6" (2.6x0.95xR)/12													
2.26	0.0703		409306	9.40	2399	6237	2560			9243	0.21	9.18	NON STRUCTURAL PRACTICE - NON-ROOFTOP DISCONNECT
A	0.01	0.0501	230088	5.28	960	2497	960			20	0.00	5.28	960 CF - EACH 75' DISCONNECT
	5.15	0.0963	179218	4.11	1438	3740	1600	400	480	9223	0.21	3.90	BR#1 - BIORETENTION (F-6) Surface Area of M-2 @ 1.0 ponding (75% above) Stone Below MBR (Includes Rev) 1.00 x 0.4
TOTAL	2.26	0.0703	409306	9.40	2399	6237	2560	400	480	9243	0.21	9.18	



BIORETENTION (UNDERDRAIN) (F-6) NOT TO SCALE
BIORETENTION (OVERFLOW) (F-6) NOT TO SCALE

Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
planting soil (2.5' to 4' deep)	see Appendix A, Table A.4	n/a	USDA soil types loamy sand, sandy loam or loam
mulch	shredded hardwood	n/a	aged 6 months, minimum
pea gravel (diameter and certain drain)	pea gravel: ASTM D-448 ornamental stone: washed cobble	pea gravel: No. 5 slope: 2" to 5"	
geotextile	Class "C" - apparent opening size (ASTM-D4751), grab tensile strength (ASTM-D-4632), puncture resistance (ASTM-D-4833)	n/a	for use as necessary beneath underdrains only
underdrain gravel	AASHTO M-43	0.375" to 0.75"	
underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underdrain pipes
poored in place concrete (if required)	MSHA Mix No. 3, F _c = 3000 psi @ 28 days, normal weight, air-entrained, conforming to meet ASTM-615-00	n/a	on-site testing of poured-in-place concrete required; 28 day strength and slump test; all concrete design (cast-in-place or pre-cast not using precast) approved draw or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 309.8.99; vertical loading (BS-10 or BS-20), allowable horizontal loading (based on soil pressure); and analysis of potential cracking
soil (1' deep)	AASHTO M-6 or ASTM-C-33	0.02" to 0.04"	Soil substitutions such as Diabase and Gneiss are not acceptable. No calcium carbonate or dolomite used substitutions are acceptable. No "rock dust" can be used for soil.

OWNER
E. ALEXANDER AND BETTY SMITH ADAMS TRUSTEES OF THE RICHARD WARFIELD TRUST, 6096 KEYSER ROAD, HOME VA 22639 410-531-9635

DEVELOPER
TEN OAKS SOLAR LLC
SOLHARVEST ENERGY
ATTN: JOHN FORGASH
THE PATRIOT BUILDING
172 KERTON ROAD
MEDFORD, NJ 08055
PHONE: 609-678-6911

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
STORMWATER MANAGEMENT NOTES AND DETAILS

TEN OAKS SOLAR
6160 TEN OAKS ROAD, CLARKSVILLE, MD 21029
DEED L.14369 F.464 ZONED RR-DEO PARCEL
TAX MAP 34 BLOCK 11 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: RHY
DRAWN BY: IMH
CHECKED BY: RHY
DATE: JANUARY 2022
SCALE: AS SHOWN
W.O. NO.: 46576

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRES DATE 08-27-2022

ROBERT H. VOGEL, PE No.16193

11 SHEET 11