

SPRING STREET RENEWABLES, LLC  
LARGE-CAPACITY GROUND MOUNTED  
SOLAR ENERGY SYSTEM  
SPRING STREET

FRANKLIN, MASSACHUSETTS  
NOVEMBER 21, 2018

APPLICANT:

SPRING ST RENEWABLES, LLC  
101 SUMMER STREET  
BOSTON, MA 02110

LAND SURVEYOR & CIVIL ENGINEER:

ANDREWS SURVEY & ENGINEERING, INC.  
104 MENDON STREET  
UXBRIDGE, MA 01569  
P: 508.278.3897  
F: 508.278.2289

ENVIRONMENTAL:

ECR, LLC.  
P.O. BOX 4012  
PLYMOUTH, MA 02361  
P: 617-529-3792

CONSULTANT:

NEXAMP, INC.  
101 SUMMER STREET  
BOSTON, MA 02110

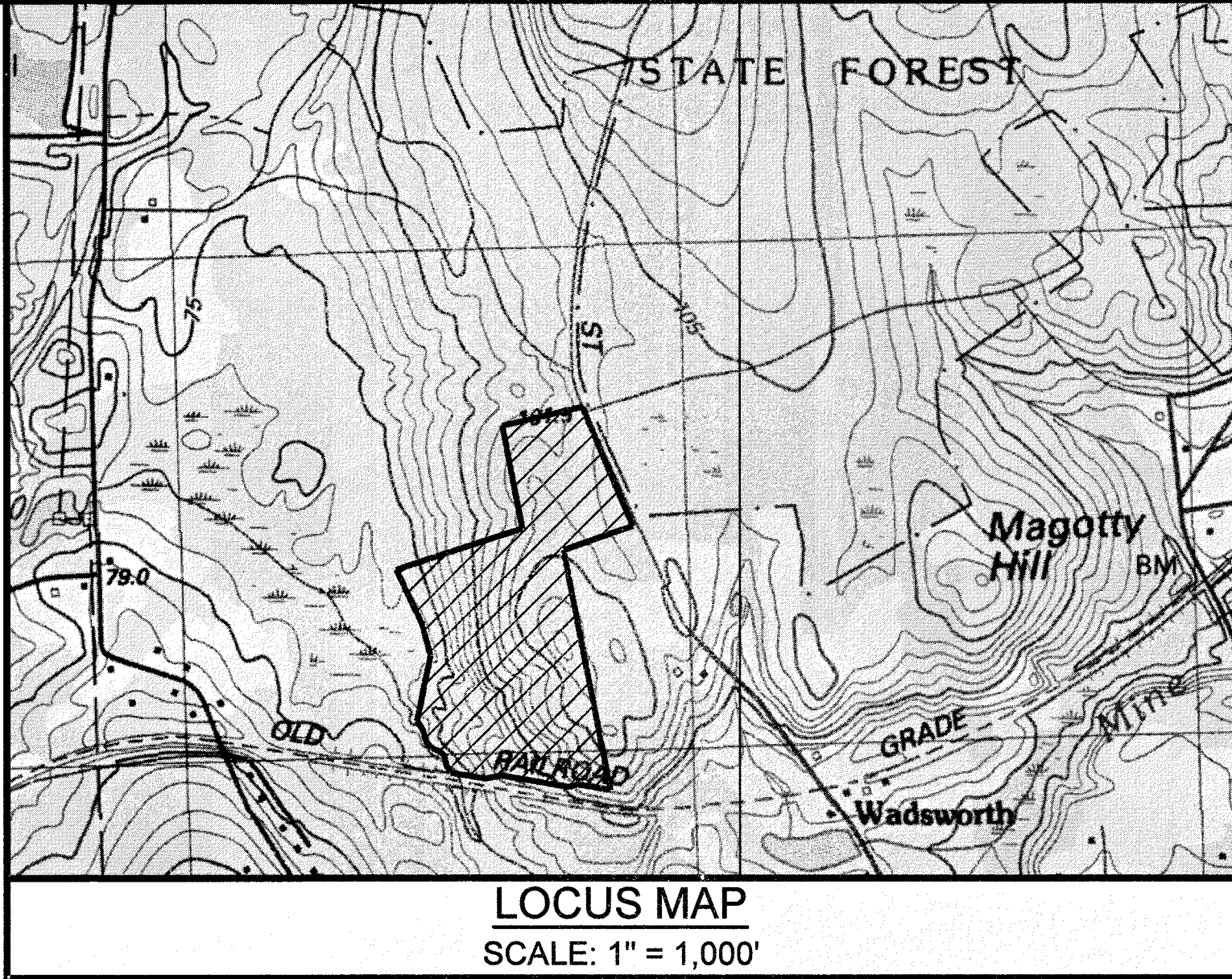
**OWNER OF RECORD:**  
RICHARD COSTELLO  
PO BOX 283  
FRANKLIN, MA 02038  
**(TOWN) ASSESSORS INFORMATION:**  
MAP 310, PARCEL 02  
TOTAL PARCEL AREA: 570,636± S.F. (13.2± AC.)  
**DEED REFERENCE:**  
DEED BK. 2731, PG. 108  
**PLAN REFERENCES:**  
P.B. 54, PL. 2557

**OWNER OF RECORD:**  
MICHAEL J BUCCI  
4 ALMOND DRIVE  
JOHNSTON, RI 02919  
**(TOWN) ASSESSORS INFORMATION:**  
MAP 309, PARCEL 15  
TOTAL PARCEL AREA: 424,013± S.F. (9.7± AC.)  
**DEED REFERENCE:**  
DEED BK. 34238, PG. 115  
**PLAN REFERENCES:**  
P.B. 468, PL. 616

**OWNER OF RECORD:**  
ANTHONY DEPOTO ETALS  
8 SPRING STREET  
FRANKLIN, MA 02038  
**(TOWN) ASSESSORS INFORMATION:**  
MAP 323, PARCEL 44  
TOTAL PARCEL AREA: 1,121,670± S.F. (25.75± AC.)  
**DEED REFERENCE:**  
DEED BK. 589, PG. 111  
**PLAN REFERENCES:**  
P.B. 54, PL. 2557

DRAWING DATE	LAST REVISION	SHEET NO.	SHEET TITLE
11/21/18		C-1.0	COVER SHEET
11/21/18		C-1.1	INDEX SHEET
11/21/18		C2.1 - C2.3	SITE PLAN
11/21/18		C3.1 - C-3.3	EROSION & SEDIMENT CONTROL PLAN
11/21/18		C3.4	EROSION & SEDIMENT CONTROL NOTES & DETAILS
11/21/18		C4.1-C4.2	CONSTRUCTION DETAILS
11/21/18		C5.1	WETLAND CROSSING & REPLICATION PLAN
11/21/18		C5.2	LANDSCAPE PLAN
11/21/18		C5.3	SPRING ST IMPROVMENTS PLAN & PROFILE
11/21/18		E-101	AC 1-LINE ELECTRIC DIAGRAM (NEXAMP)

GOVERNMENT / UTILITY CONTACTS	
FRANKLIN POLICE DEPT. 911 PANTHER WAY P: 508-528-1212 ATTN: THOMAS LYNCH, CHIEF	FRANKLIN D.P.W. 257 FISHER STREET P: 508-520-4910 F: 508-520-4939 ATTN: ROBERT CANTOREGGI, DIRECTOR
FRANKLIN FIRE DEPT. 40 WEST CENTRAL STREET P: 508-528-2323 P: 508-520-4912 ATTN: GARY MCCARRAHER, CHIEF	FRANKLIN BUILDING DEPT. 355 EAST CENTRAL STREET P: 508-520-4926 F: 508-520-4906 ATTN: LLOYD BROWN, BUILDING COMMISSIONER
FRANKLIN PLANNING DEPARTMENT 355 EAST CENTRAL STREET P: 508-520-4907 ATTN: AMY LOVE, PLANNER	



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Land Surveying - Civil Engineering - Site Planning

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500 East Washington Street  
North Attleboro, Massachusetts 02760  
P: 508-316-0452 F: 508-316-0963

APPROVAL UNDER SITE PLAN REVIEW  
FRANKLIN PLANNING BOARD

BEING A MAJORITY DATE:

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FRANKLIN TOWN CLERK DATE

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LARGE-CAPACITY GROUND  
MOUNTED SOLAR ENERGY SYSTEM  
SPRING STREET  
FRANKLIN, MA

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REVISIONS		
NO.	DATE	DESCRIPTION

SHEET TITLE

COVER SHEET

11/21/18  
P.E.

11/21/18  
P.L.S.

DES BY: KNP	DATE: NOVEMBER 21, 2018	C1.0
CHK BY: RMM	PROJECT NO. 2018-101	

PLAN NO. L-5591



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**SEDIMENTATION AND EROSION CONTROL (STORMWATER POLLUTION PREVENTION PLAN)**

**1.1. TYPICAL PRACTICES TO BE APPLIED TO THE SITE INCLUDE THE FOLLOWING:**

- 1.1.1 PRIOR TO EARTH DISTURBANCE IN ANY WORK AREA, INSTALL EROSION CONTROL BARRIERS BETWEEN THE WORK AREA AND THE SURFACE WATER RESOURCE TO WHICH IT DRAINS.
- 1.1.2 DISCHARGE WATER FROM DEWATERING OPERATIONS TO A TEMPORARY SEDIMENTATION BASIN ON SITE PRIOR TO DISCHARGING THE WATER TO THE STREET DRAINAGE SYSTEM.
- 1.1.3 PROVIDE TEMPORARY BURNS AND SWALES TO DIVERT SURFACE WATER AWAY FROM THE AREAS THAT WILL BE EXPOSED BY CONSTRUCTION ACTIVITY TO MINIMIZE THE AMOUNT OF SURFACE WATER COMING INTO CONTACT WITH EXPOSED SOILS. PROVIDE STABLE OUTLETS FOR THESE DEVICES, AND LINE OR VEGETATE THESE DIVERSIONS TO PROVIDE FOR THEIR STABILITY DURING CONSTRUCTION.
- 1.1.4 LIMIT THE EXTENT OF EXPOSED SOILS TO AREAS THAT CAN BE WORKED AND RESTABILIZED WITHIN THE CONSTRUCTION SEASON AND DURING THE SPECIFIC CONSTRUCTION PHASE.
- 1.1.5 WHEN EARTHWORK CONSTRUCTION ACTIVITY IN AN AREA IS COMPLETE, STABILIZE THE AREA WITH A SUITABLE SURFACE AS DESCRIBED HEREIN.
- 1.1.6 IN ADDITION TO THESE PRACTICES, FOLLOW THE SPECIAL PRACTICES DESCRIBED BELOW. COMPLY WITH THE DIRECTIONS OF THE APPLICANT'S REPRESENTATIVE TO ADDRESS EROSION AND SEDIMENTATION CONDITIONS THAT MAY ARISE ON A CASE BY CASE BASIS DURING CONSTRUCTION.

THE FOLLOWING IS A DESCRIPTION OF MINIMUM CONSTRUCTION REQUIREMENTS AND DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES WITH REGARD TO DETERMINING THE ADEQUACY OF MEANS AND METHODS OF CONSTRUCTION.

**1.2. MAINTENANCE**

DURING THE PERIOD OF CONSTRUCTION AND/OR UNTIL LONG TERM VEGETATION IS ESTABLISHED:

- 1.2.1 SEEDED AREAS WILL BE FERTILIZED AND RESEEDED AS NECESSARY TO ENSURE VEGETATION ESTABLISHMENT.
- 1.2.2 TEMPORARY SEDIMENTATION CONTROLS WILL BE CHECKED AFTER EACH SIGNIFICANT RAINFALL AND CLEANED AS NEEDED TO RETAIN STORAGE CAPACITY.
- 1.2.3 TEMPORARY DRAINAGE SWALES WILL BE CHECKED WEEKLY AND REPAIRED WHEN NECESSARY.
- 1.2.4 THE EROSION CONTROL BARRIERS SHALL BE INSPECTED, CLEANED, REPLACED AND/OR REPAIRED AS NECESSARY, PERIODICALLY AND AFTER EACH SIGNIFICANT RAINFALL.
- 1.2.5 THE CONTRACTOR SHALL GIVE TWENTY-FOUR (24) HOURS NOTICE TO PERTINENT TOWN DEPARTMENTS BEFORE COMMENCING ANY WORK IN THE FIELD.

**1.3. GENERAL**

- 1.3.1 ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH (USDA) NATURAL RESOURCES CONSERVATION SERVICE (NRCS, FORMERLY SCS) GUIDELINES AND ALL LOCAL, COUNTY AND MUNICIPAL REGULATIONS.
- 1.3.2 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN THE EROSION AND SEDIMENTATION CONTROLS DURING CONSTRUCTION, AND THESE CONTROLS SHALL REMAIN IN PLACE UNTIL ALL SITE WORK IS COMPLETE AND GROUND COVER IS ESTABLISHED.
- 1.3.3 ALL WORK SHALL BE IN ACCORDANCE WITH THE PERMITS AND APPROVALS ISSUED AND THE CONSTRUCTION SPECIFICATIONS.
- 1.3.4 STOCKPILES SHALL BE SURROUNDED ON THEIR PERIMETERS WITH EROSION CONTROL BARRIERS TO PREVENT AND/OR CONTROL SILTATION AND EROSION.
- 1.3.5 TOPS OF STOCKPILES SHALL BE COVERED IN SUCH A MANNER THAT STORMWATER DOES NOT INFILTRATE THE MATERIALS AND THEREBY RENDER THE SAME UNSUITABLE FOR FILL USE.
- 1.3.6 ALL DISTURBED OR EXPOSED AREAS SUBJECT TO EROSION SHALL BE STABILIZED WITH MULCH OR SEEDED FOR TEMPORARY VEGETATIVE COVER. NO AREA, SUBJECT TO EROSION SHALL BE LEFT DISTURBED AND UNSTABILIZED FOR PERIODS LONGER THAN IS ABSOLUTELY NECESSARY TO CARRY OUT THAT PORTION OF THE CONSTRUCTION WORK. SEEDING SHALL BE PERFORMED BETWEEN THE MONTHS OF APRIL AND SEPTEMBER ONLY.
- 1.3.7 THE CONTRACTOR SHALL KEEP ON SITE AT ALL TIMES ADDITIONAL EROSION CONTROL BARRIERS FOR INSTALLATION AT THE DIRECTION OF THE OWNER'S REPRESENTATIVE OR LOCAL OFFICIALS TO MITIGATE ANY EMERGENCY CONDITION.
- 1.3.8 THE EROSION CONTROL BARRIERS SHALL BE THE SAME AS THE LIMIT OF WORK LINE NECESSARY FOR CONSTRUCTION PURPOSES.
- 1.3.9 THE AREA OR AREAS OF ENTRANCE AND EXIT TO AND FROM THE SITE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

**2.1 PLANTING AND LANDSCAPING**

- 2.1.1 COVER ALL PLANTING BEDS WITH 3" SHREDDED HARDWOOD BARK MULCH WITHIN A SEVENTY-TWO HOUR PERIOD AFTER PLANTING. SEE PLAN FOR BED LAYOUT.
- 2.1.2 ALL PLANT MATERIALS FURNISHED BY THE CONTRACTOR SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE OF LANDSCAPE WORK.
- 2.1.3 LOAM: LOAM MOVED DURING THE COURSE OF CONSTRUCTION SHALL BE RETAINED AND DISTRIBUTED WITHIN THE SITE IN ACCORDANCE WITH THE LANDSCAPE PLAN. STOCKPILED LOAM SHALL NOT BE MIXED WITH ANY SUBSOIL OR UNSUITABLE MATERIALS. ALL EXCESS LOAM SHALL REMAIN ON THE PROPERTY OF THE OWNER. NEW LOAM IF REQUIRED TO PROVIDE THE SPECIFIED DEPTH, SHALL BE A FERTILE, FRAGILE MEDIUM TEXTURED SANDY LOAM FREE OF MATERIAL TOXIC TO HEALTHY PLANT GROWTH. LOAM SHALL ALSO BE FREE OF ALL STUMPS, ROOTS, STONES AND OTHER EXTRANEIOUS MATTER ONE INCH (1") OR GREATER IN DIAMETER. THE PH SHALL BE BETWEEN 5.5 AND 7.5 WHEN TESTED.
- 2.1.4 SOIL SEED MIX: SEEDING SHALL TAKE PLACE AS DIRECTED BY NEXAMP. SEED SHALL BE FRESH, CLEAN, AND SELECTED FROM THE PREVIOUS YEARS CROP. SHALL HAVE A MAXIMUM WEED SEED CONTENT OF 1% IN THE FOLLOWING PROPORTIONS:

ERNST SOLAR FARM SEED MIX		
Festuca rubra	(Creeping Red Fescue)	50.0%
Festuca brevipila, Chariot	(Hard Fescue, Chariot)	15.0%
Festuca brevipila, Harpoon	(Hard Fescue, Harpoon)	15.0%
Festuca rubra spp.communitata	(Chewings Fescue)	10.0%
Poa pratensis, Moonstruck	(Kentucky Bluegrass, Moonstruck)	5.0%
Poa pratensis, Shamrock	(Kentucky Bluegrass, Shamrock)	5.0%

ERNST NORTHEASTERN POLLINATOR MIX		
Schizachyrium scoparium, Albany Pine	Bush-NY Ecotype (Little Bluestem, Albany Pine Bush - NY Ecotype)	42.0%
Chamaecrista fasciculata, PA Ecotype	(Partridge Pea, PA Ecotype)	10.0%
Coreopsis lanceolata	(Lanceleaf Coreopsis)	10.0%
Echinacea purpurea	(Purple Coneflower)	9.00%
Agastache foeniculum	(Anise (Lavender) Hyssop)	8.0%
Helopsis helianthoides, PA Ecotype	(Oxeye Sunflower, PA Ecotype)	6.0%
Zizia aurea	(Golden Alexanders)	2.30%
Asclepias syriaca, PA Ecotype	(Common Milkweed, PA Ecotype)	2.0%
Asclepias tuberosa, PA Ecotype	(Butterfly Milkweed, PA Ecotype)	2.0%
Aster lateriflorus	(Calico Aster)	1.10%
Eupatorium perfoliatum, PA Ecotype	(Boneset, PA Ecotype)	1.0%
Penstemon brevis	(Hairy Beardtongue)	1.0%
Pycnanthemum tenuifolium	(Narrowleaf Mountainmint)	1.0%
Veronica novboracensis, PA Ecotype	(New York Ironweed, PA Ecotype)	1.0%
Solidago bicolor, PA Ecotype	(White (Silver Rod) Goldenrod, PA Ecotype)	0.70%
Solidago nemoralis, PA Ecotype	(Gray Goldenrod, PA Ecotype)	0.70%
Monarda fistulosa, Fort Indiantown Gap-PA Ecotype	(Wild Bergamot, Fort Indiantown Gap-PA Ecotype)	0.60%
Eupatorium maculatum, PA Ecotype	(Spotted Joe Pye Weed, PA Ecotype)	0.50%
Solidago juncea, PA Ecotype	(Early Goldenrod, PA Ecotype)	0.30%

**NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES**

Elymus riparius	(Riverbank Wild Rye)
Schizachyrium scoparium	(Little Bluestem)
Festuca rubra	(Red Fescue)
Andropogon gerardii	(Big Bluestem)
Panicum virgatum	(Switch Grass)
Veronica novboracensis	(New York Ironweed)
Agrostis perennans	(Upland Bentgrass)
Bidens frondosa	(Beggar Ticks)
Eupatorium maculatum	(Eutrochium maculatum) (Spotted Joe Pye Weed)
Eupatorium perfoliatum	(Boneset)
Aster novae-angliae	(Symphyotrichum novae-angliae) ( New England Aster)
Scirpus cyperinus	(Wool Grass)
Juncus effusus	(Soft Rush)

SEEDED AREAS SHALL, AT A MINIMUM, INCLUDE ALL AREAS OF THE SITE THAT HAVE BEEN DISTURBED OR ARE BARREN UNLESS OTHERWISE NOTED ON THE PLANS. SEED SHALL BE APPLIED AT A RATE OF 0.5 LBS. PER 1000 SQUARE FEET.

2.1.5 DISTURBED AREAS: ANY AREAS DISTURBED DURING THE COURSE OF CONSTRUCTION ARE TO BE RESTORED TO ORIGINAL (OR BETTER) CONDITION BY CONTRACTOR BEFORE COMPLETION OF THE PROJECT, AND ARE SUBJECT TO APPROVAL BY LANDSCAPE ARCHITECT AND OWNER. ALL GRASS AREAS DISTURBED DURING CONSTRUCTION SHALL BE YORK RAKED TO REMOVE STONES AND LOAMED AND SEEDED AS PER SPECIFICATIONS.

**3.1 CONSTRUCTION SEQUENCE**

- 3.1.1 PRE-CONSTRUCTION MEETING WITH CONTRACTOR, ENGINEER, AND BUILDING DEPARTMENT
- 3.1.2 ESTABLISH LIMIT OF WORK AREAS
- 3.1.3 INSTALL EROSION CONTROL BARRIERS ("ECB")
- 3.1.4 INSPECTION TO BE PERFORMED BY SITE ENGINEER
- 3.1.5 CLEAR AND GRUB AREAS DESIGNATED WITHIN WORK AREA
- [NOTE: ECB'S ARE TO BE INSPECTED DAILY AND MAINTAINED AS NECESSARY BY CONTRACTOR.]
- 3.1.6 STRIP TOP AND SUBSOIL (STOCKPILE IN AREAS OUTSIDE OF WETLAND BUFFER ZONES)
- 3.1.7 CONSTRUCT GRAVEL ROADS
- 3.1.8 INSPECTION TO BE PERFORMED BY SITE ENGINEER
- 3.1.9 INSTALL SOLAR PANEL POSTS
- 3.1.10 INSTALL REMAINING SOLAR PANEL EQUIPMENT
- 3.1.11 RAKE & SEED ON ALL DISTURBED AREAS

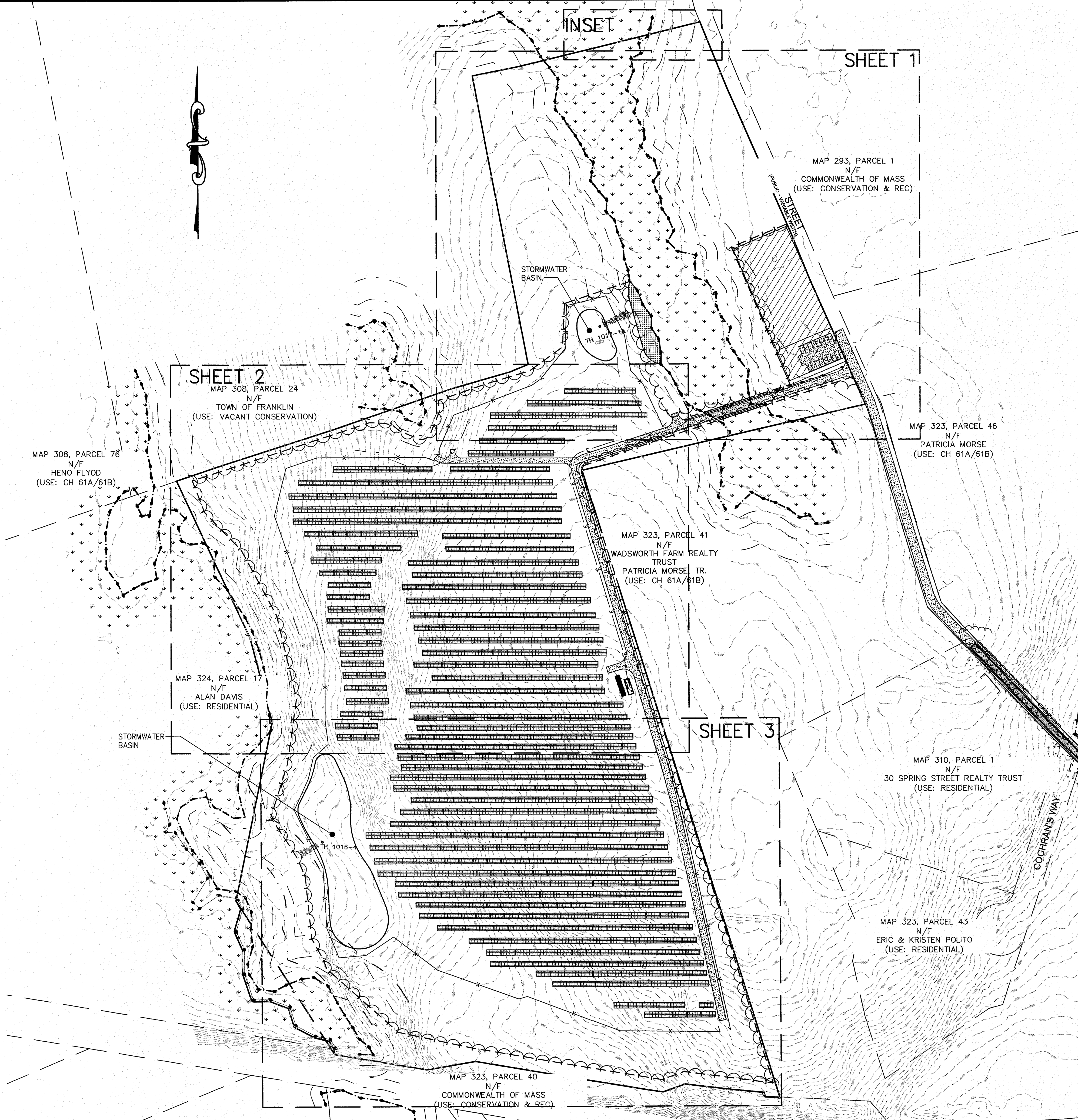
**ZONING REQUIREMENTS**

ZONE: RURAL RESIDENTIAL I  
PROPOSED USE: GROUND-MOUNTED SOLAR PV SYSTEM

	REQUIRED	PROPOSED
AREA	40,000 SF	2,098,739 SF
FRONTAGE	200 FT	967 FT
DEPTH	200 FT	N/A
LOT WIDTH	180 FT	N/A
FRONT YARD	40 FT	N/A
SIDE YARD	40 FT	N/A
REAR YARD	40 FT	N/A
MAXIMUM HEIGHT	35 FT	N/A
MAXIMUM IMPER. COVERAGE OF EXISTING UPLAND	25%	0.00%

OBSERVATION TEST HOLE DATA  
PERFORMED BY: John Madeiros SE#2849  
ANDREWS SURVEY & ENGINEERING, INC. (10/16/18 & 10/17/18)

TH 1017-16 (ELEV. = 338.8)		
0-10"	A	FSL
10-18"	B	FSL
18-120"	C	SL
ESHGWT @ 5' (333.8)		
WATER @ 5' (328.8)		
REFUSAL @ N/A		
TH 1016-4 (ELEV. = 280.0)		
0-3"	A	FSL
3-30"	B	FSL
30-84"	C	SL
ESHGWT @ 2.5' (257.5)		
WATER @ 5.2' (254.8)		
REFUSAL @ N/A		



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APPROVAL UNDER SITE PLAN REVIEW.  
FRANKLIN PLANNING BOARD

BEING A MAJORITY DATE:

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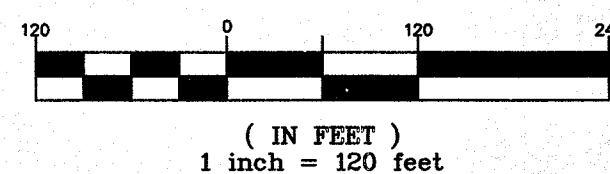
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APPLICANT:  
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**REVISIONS**

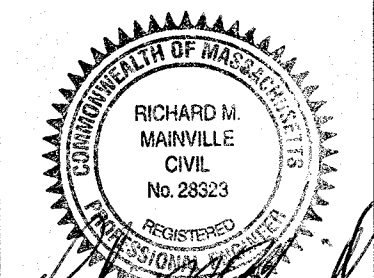
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**GRAPHIC SCALE**



**SHEET TITLE**

**INDEX SHEET**



DESIGNED BY: KNP  
CHECKED BY: RMM  
DATE: NOVEMBER 21, 2018  
PROJECT NO. 2018-101

C1.1  
PLAN NO. L-5691



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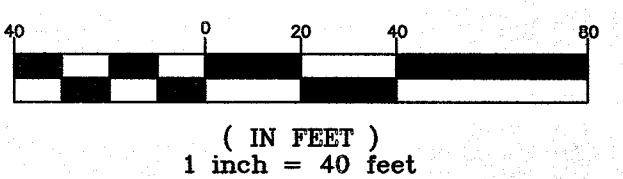
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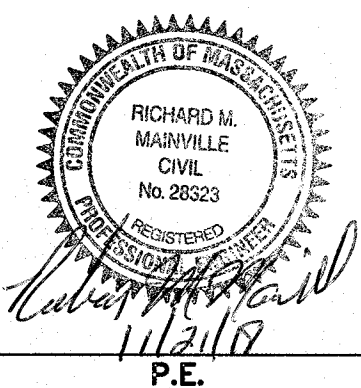
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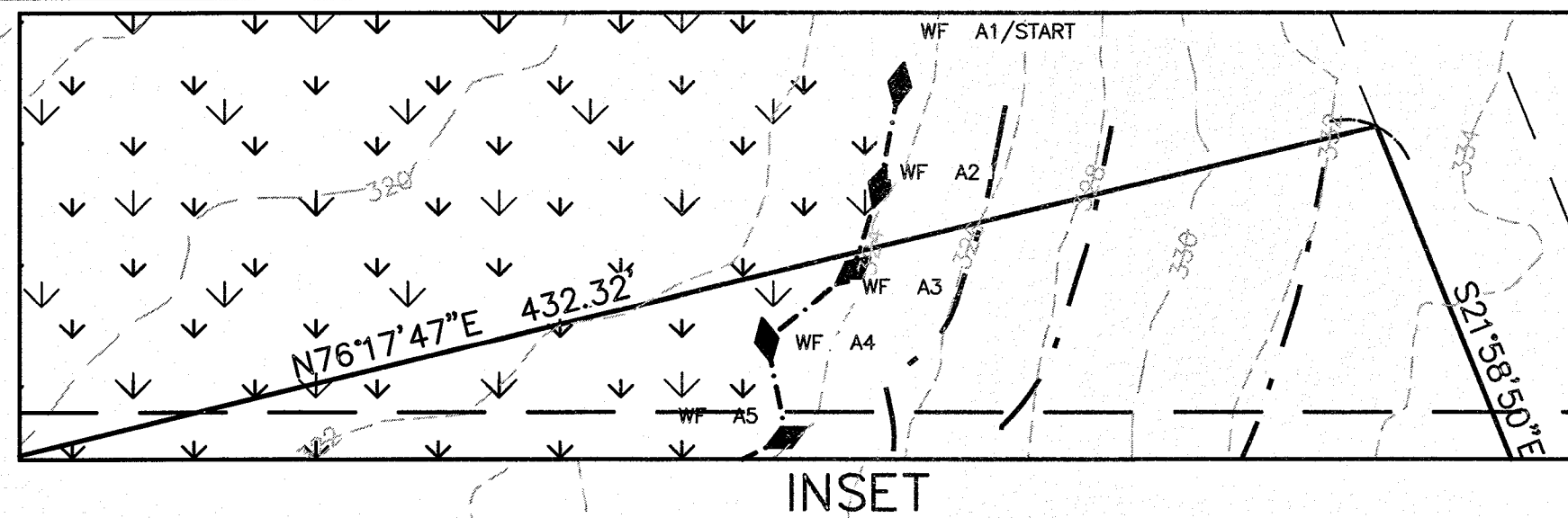
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SITE PLAN  
SHEET 1 OF 3



DES BY: KNP DATE: NOVEMBER 21, 2018  
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C2.1  
PLAN NO. L-5691



MAP 293, PARCEL 1  
N/F  
COMMONWEALTH OF MASS  
(USE: CONSERVATION & REC)

SPRING STREET  
(PUBLIC VARIABLE WIDTH)

MATERIAL & EQUIPMENT  
LAYDOWN AREA  
(SEE SHEET C5.2 FOR  
POST-CONSTRUCTION TREATMENT)

PROPOSED GRAVEL  
PUBLIC PARKING

PARKING LOT  
SIGN

UTILITY POLE  
"AUTHORIZED  
VEHICLES ONLY"  
SIGN

PROPOSED WETLAND FILL  
(APPROX 2,940 SF)

PROPOSED WETLAND  
REPLICATION  
(APPROX 5,890 SF)

PROPOSED FLARED  
END, SECTION 2  
(FES2)  
INV = 335.50

12" HPDE, L=63.8',  
S=0.0078

PROPOSED EMERGENCY  
SPILLWAY  
PROPOSED OUTLET  
STRUCTURE 2 (OS2)

PROPOSED STORMWATER BASIN 2  
BERM=340.0  
BOT=336.0  
EMERGENCY WEIR=339.5  
100YR FLOOD PEAK=338.0

PROPOSED  
SECURITY FENCE

MATCH SHEET 2  
N73°59'44"E 141.06'  
N67°45'43"E 45.78'

PROPOSED GRASS SWALE

PROPOSED PERSONNEL GATE

PROPOSED RACKING  
WITH MODULE (TYP)

UTILITY METER POLE

OVERHEAD MV

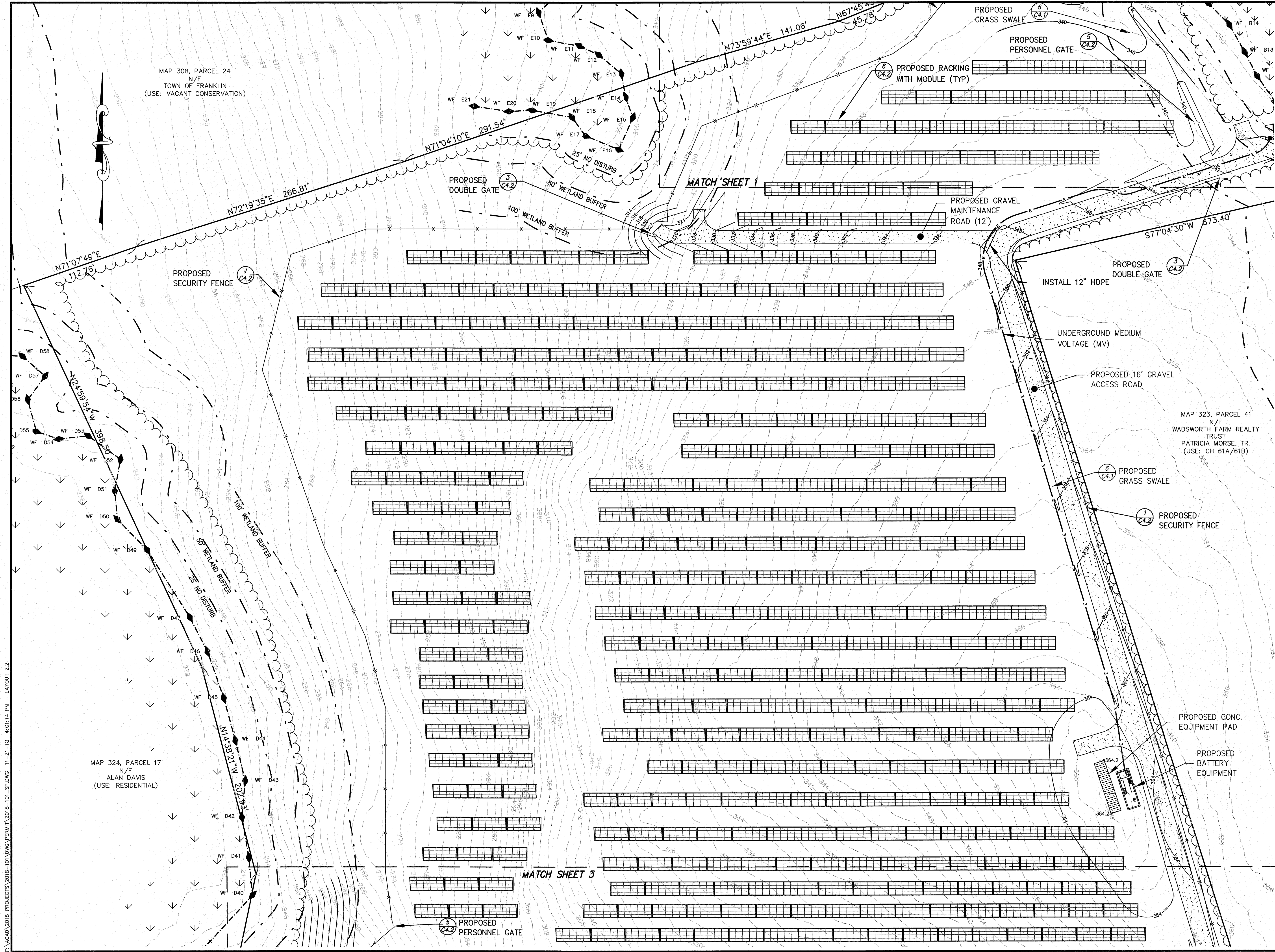
DISCONNECT POLE

RISER/RECLOSER POLE

PROPOSED RETAINING WALL  
AND (4) 12" PIPES  
(SEE SHEET 5.1)

PROPOSED PIPE GATE





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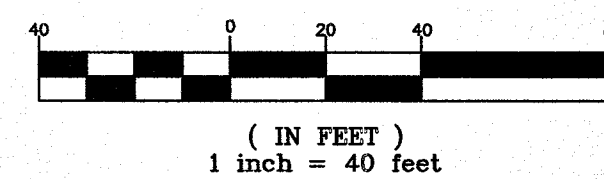
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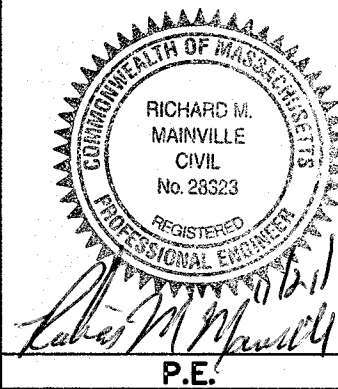
#### GRAPHIC SCALE



#### SHEET TITLE

SITE PLAN

SHEET 2 OF 3

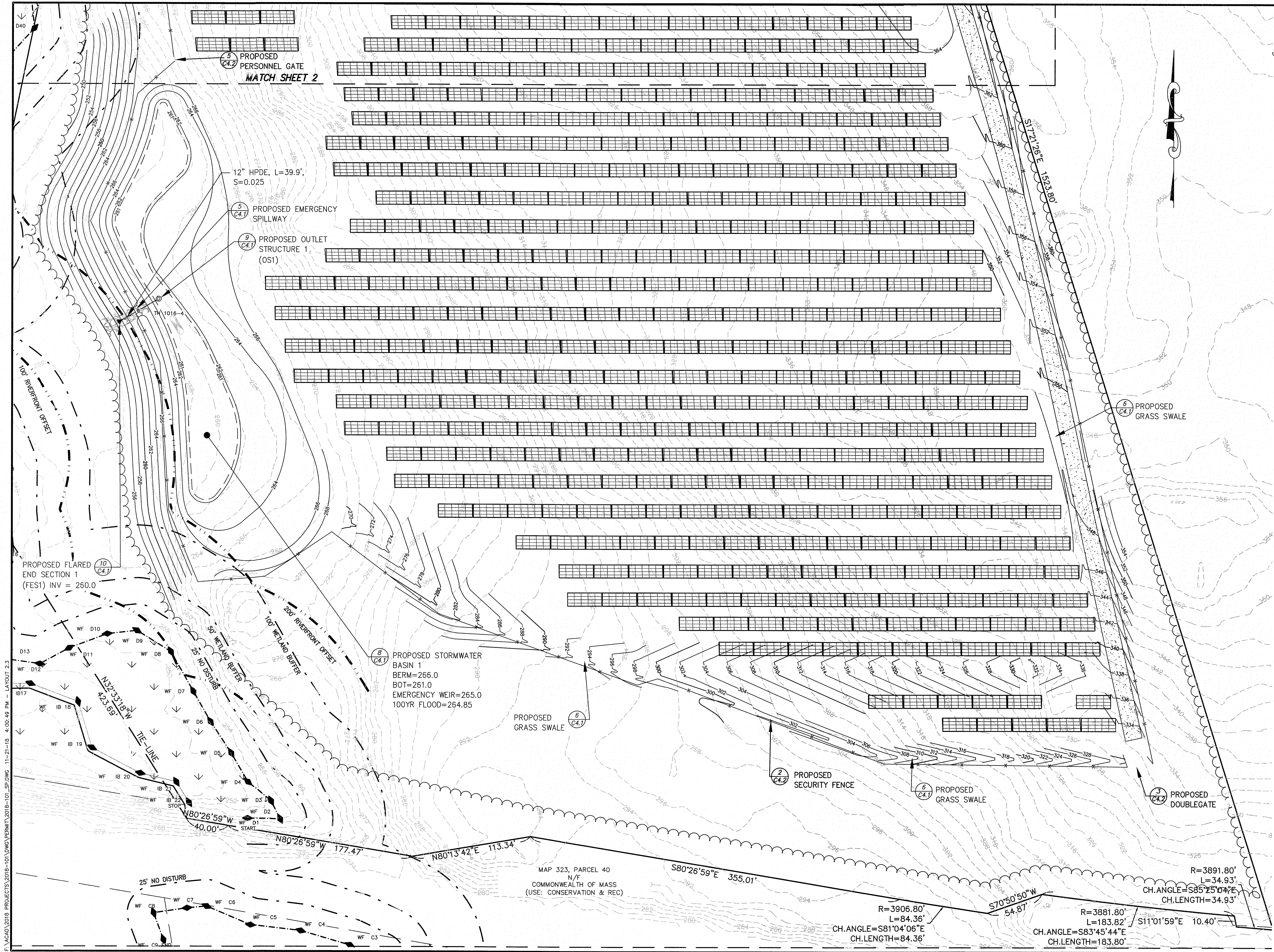


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C2.2

PLAN NO. L-5691





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Land Surveying - Civil Engineering - Site Planning

P.O. Box 312, 104 Mendon Street  
Uxbridge, Massachusetts 01569  
P: 508-278-3897 F: 508-278-2289

500 East Washington Street  
North Attleboro, Massachusetts 02760  
P: 508-316-0452 F: 508-316-0963

APPROVAL UNDER SITE PLAN REVIEW.  
FRANKLIN PLANNING BOARD

BEING A MAJORITY

DATE:

THIS CERTIFIES THAT THE NOTICE OF APPROVAL  
OF THIS PLAN BY THE FRANKLIN PLANNING  
BOARD HAS BEEN RECEIVED AND RECORDED ON  
AT  
AND NO APPEAL WAS RECEIVED DURING THE 20  
DAYS NEXT AFTER SUCH RECEIPT OF SAID  
NOTICE.

FRANKLIN TOWN CLERK

DATE

PROJECT:

LARGE-CAPACITY GROUND  
MOUNTED SOLAR ENERGY SYSTEM  
SPRING STREET  
FRANKLIN, MA

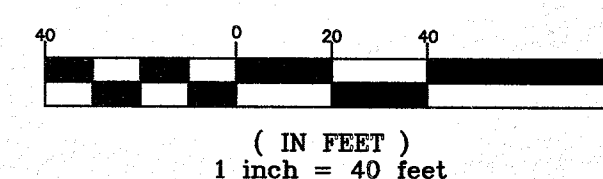
APPLICANT:

SPRING ST. RENEWABLES, LLC  
101 SUMMER STREET  
BOSTON, MA 02110

REVISIONS

NO.	DATE	DESCRIPTION

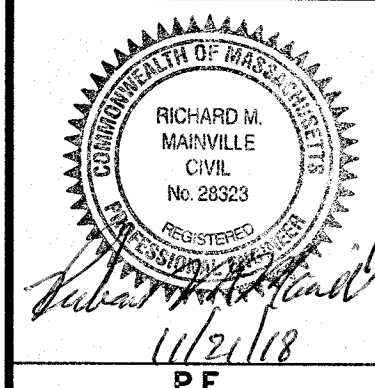
GRAPHIC SCALE



SHEET TITLE

SITE PLAN

SHEET 3 OF 3



DES BY: KNP DATE: NOVEMBER 21, 2018  
CHK BY: RMM PROJECT NO: 2018-101

C2.3

PLAN NO. L-5691



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Andrews Survey & Engineering, Inc.  
Land Surveying - Civil Engineering - Site Planning

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FRANKLIN TOWN CLERK DATE

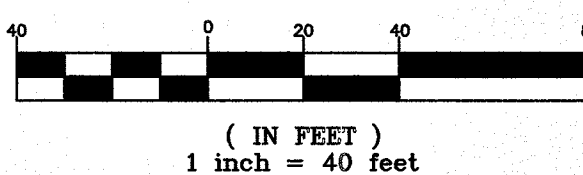
PROJECT:  
LARGE-CAPACITY GROUND  
MOUNTED SOLAR ENERGY SYSTEM  
SPRING STREET  
FRANKLIN, MA

APPLICANT:  
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#### REVISIONS

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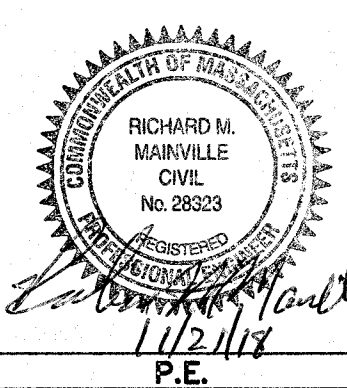
#### GRAPHIC SCALE



#### SHEET TITLE

**EROSION & SEDIMENT  
CONTROL PLAN**

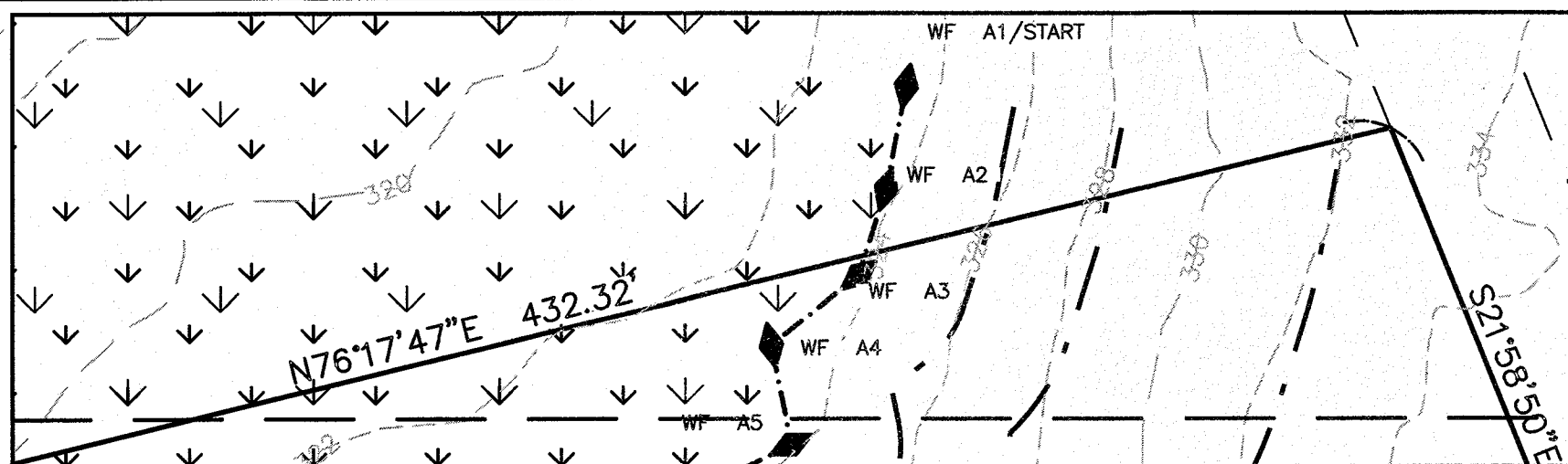
**SHEET 1 OF 3**



DES BY: KNP DATE: NOVEMBER 21, 2018  
CHK BY: RMM PROJECT NO. 2018-101

**3.1**

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INSET

MAP 293, PARCEL 1  
N/F  
COMMONWEALTH OF MASS  
(USE: CONSERVATION & REC)

SPRING STREET  
(PUBLIC - VARIABLE WIDTH)

PROPOSED EROSION  
CONTROL BARRIER  
(LIMIT OF WORK)

PROPOSED WETLAND  
REPLICATION  
(APPROX 5,890 SF)

CONSTRUCTION  
ENTRANCE

PROPOSED EROSION  
CONTROL BARRIER  
(LIMIT OF WORK)

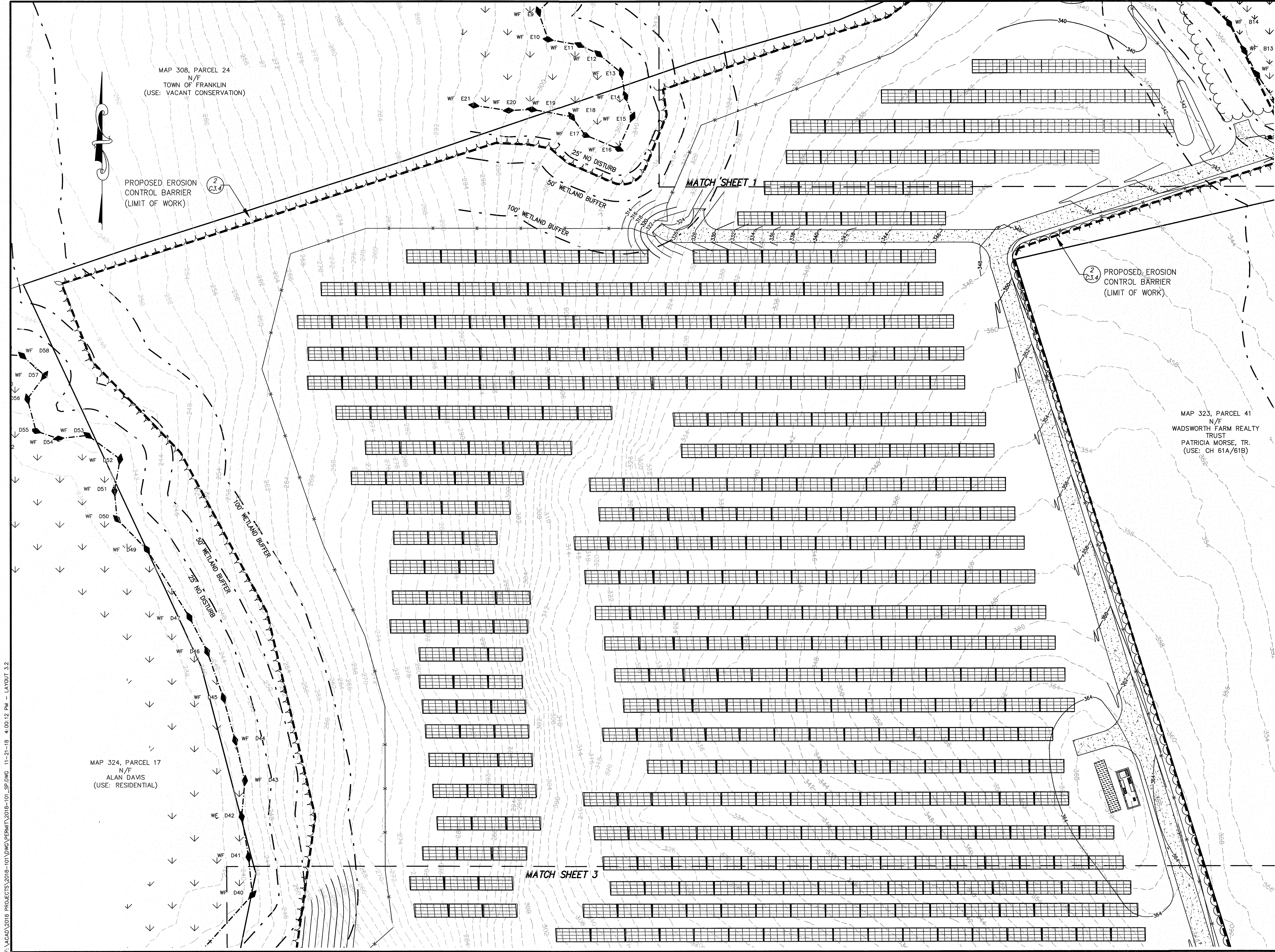
PROPOSED WETLAND FILL  
(APPROX 2,940 SF)

#### TEMPORARY SEDIMENTATION POND

1. TEMPORARY SEDIMENTATION PONDS SHALL BE CONSTRUCTED IMMEDIATELY AFTER TREE CLEARING AND GRUBBING AND PRIOR TO CONSTRUCTION OF THE PROPOSED GRAVEL DRIVE.
2. CONSTRUCT PROPOSED DETENTION POND TO 12" ABOVE FINISHED GRADE.
3. TEMPORARY SEDIMENTATION CONTROLS SHALL REMAIN IN PLACE UNTIL THE PROJECT AREA HAS BEEN SEED AND STABILIZED.
4. ONCE STABILIZED, ANY SEDIMENT ACCUMULATED IN THE PROPOSED DETENTION PONDS SHALL BE REMOVED AND CONSTRUCTED TO FINISH GRADE PER THE SITE PLAN AND DETAIL SHEETS.

MATCH SHEET 2





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APPROVAL UNDER SITE PLAN REVIEW.  
FRANKLIN PLANNING BOARD.

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FRANKLIN TOWN CLERK DATE

PROJECT: LARGE-CAPACITY GROUND MOUNTED SOLAR ENERGY SYSTEM  
MOUNTED SOLAR ENERGY SYSTEM  
SPRING STREET  
FRANKLIN, MA

APPLICANT: SPRING ST. RENEWABLES, LLC  
101 SUMMER STREET  
BOSTON, MA 02110

REVISIONS		
NO.	DATE	DESCRIPTION

GRAPHIC SCALE

( IN FEET )  
1 inch = 40 feet

SHEET TITLE

**EROSION & SEDIMENT CONTROL PLAN**

**SHEET 2 OF 3**

P.E.

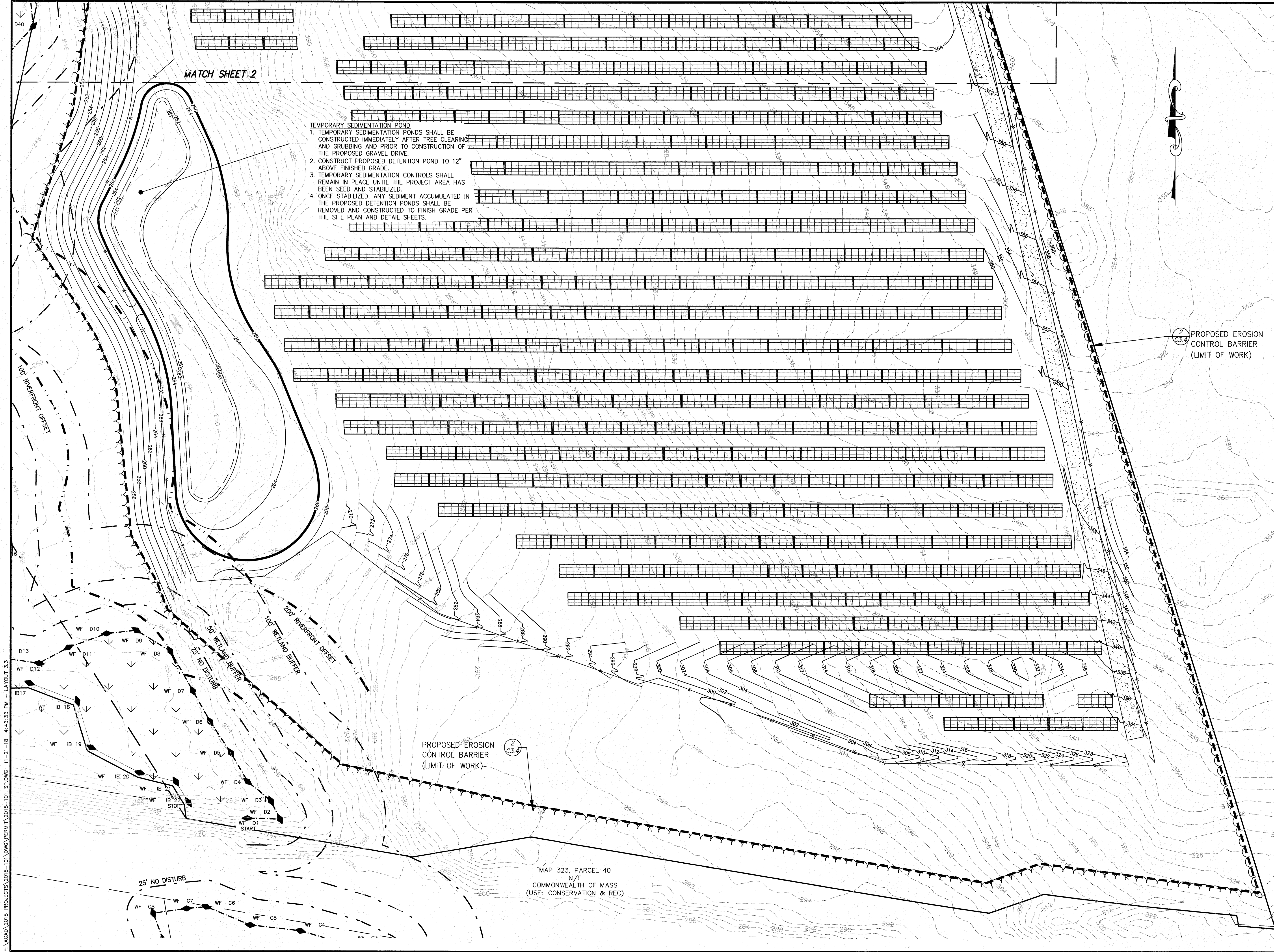
DES BY: KNP DATE: NOVEMBER 21, 2018

CHK BY: RMM PROJECT NO. 2018-101

**3.2**

PLAN NO. L-5691





**ASE**  
Andrews Survey & Engineering, Inc.  
Land Surveying - Civil Engineering - Site Planning  
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North Attleboro, Massachusetts 02760  
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APPROVAL UNDER SITE PLAN REVIEW.  
FRANKLIN PLANNING BOARD

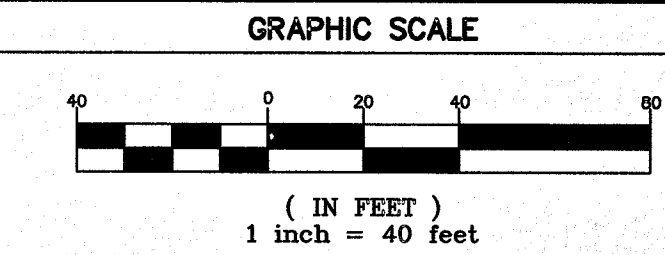
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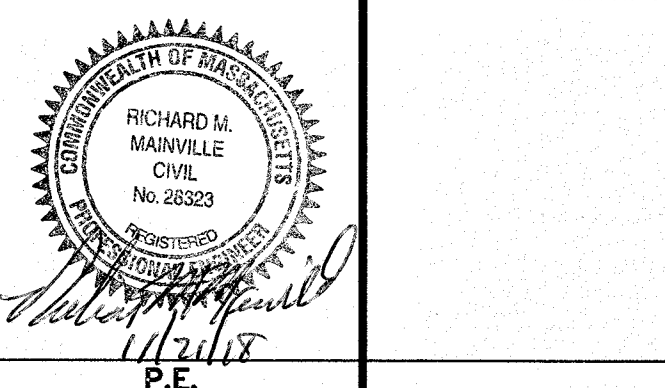
PROJECT: LARGE-CAPACITY GROUND  
MOUNTED SOLAR ENERGY SYSTEM  
MOUNTED SOLAR ENERGY SYSTEM  
SPRING STREET  
FRANKLIN, MA  
APPLICANT: SPRING ST. RENEWABLES, LLC  
101 SUMMER STREET  
BOSTON, MA 02110

REVISIONS		
NO.	DATE	DESCRIPTION



SHEET TITLE  
**EROSION & SEDIMENT  
CONTROL PLAN**

SHEET 3 OF 3



DES BY: KNP DATE: NOVEMBER 21, 2018  
CHK BY: RMM PROJECT NO. 2018-101

3.3

PLAN NO. L-5691



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EROSION AND SEDIMENT CONTROL REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. FURNISH, INSTALL, AND MAINTAIN TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS, BUT NOT NECESSARILY LIMITED TO, STRAW BALE AND SILT FENCE BARRIERS, RIPRAP, VEHICLE TRACKING PADS, DIVERSION CHANNELS AND BERMS, CHECK DAMS, STRATEGICALLY LOCATED STOCKPILES, SEDIMENT BASINS, MULCH, AND SEED MIX (HEREINAFTER "CONTROL MEASURES") ADEQUATE TO PREVENT THE CONVEYANCE OF EROSION PRODUCTS (E.G. SOIL, MULCH, SOD) OFF SITE, OR INTO ENVIRONMENTALLY SENSITIVE AREAS, OR INTO AREAS WHERE WORK WILL BE ADVERSELY IMPACTED. ENVIRONMENTALLY SENSITIVE AREAS INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, WETLANDS, TRIBUTARIES TO WETLANDS, WETLAND BUFFER ZONES, INTERMITTENT AND PERENNIAL STREAMS / RIVERS, AND THEIR ATTENDANT BUFFER ZONES.

ALL METHODS AND MATERIALS USED FOR EROSION CONTROL SHALL CONFORM TO THE REQUIREMENTS SET FORTH IN "EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS A GUIDE FOR PLANNERS, DESIGNERS, AND MUNICIPAL OFFICIALS" AS PUBLISHED BY THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF RESOURCE PROTECTION, UNLESS OTHERWISE APPROVED IN WRITING.

1. REFER TO DRAWINGS FOR LOCATION AND DETAILS OF LIMITS OF DISTURBANCE AND CONTROL MEASURES REQUIRED TO COMMENCE WORK. LIMITS OF DISTURBANCE SHALL BE MARKED WITH TAPE, SIGNS, OR ORANGE CONSTRUCTION FENCE PRIOR TO COMMENCING ANY LAND DISTURBANCE ACTIVITIES. CONTROL MEASURES WILL BE ADEQUATE ONLY FOR VEGETATION CLEARING. THE DRAWINGS ARE NOT INTENDED TO GRAPHICALLY DEPICT ALL CONTROL MEASURES THAT WILL BE REQUIRED TO MEET THE REQUIREMENTS DESCRIBED IN 1.01.A.

2. DEVISE AND EMPLOY CONTROL MEASURES THROUGHOUT THE DURATION OF PROJECT, OVER ALL AREAS DISTURBED OR UNDISTURBED BY CONSTRUCTION, AS NECESSARY TO MEET THE REQUIREMENTS DESCRIBED IN 1.01.A.

3. DEVISE AND EMPLOY TEMPORARY CONTROL MEASURES AS NECESSARY TO MEET THE REQUIREMENTS DESCRIBED IN 1.01.A, WHILE ALLOWING WORK TO PROCEED IN AN EFFICIENT, COST EFFECTIVE MANNER.

4. DEVISE, EMPLOY AND MAINTAIN CONTROL MEASURES UNTIL SUCH TIME AS THE ENTIRE SITE IS PERMANENTLY STABILIZED BY ESTABLISHED VEGETATION, FINISH LANDSCAPE MATERIALS, PAVED SURFACES, AND/OR ROOF AREA.

5. ONCE THE SITE IS PERMANENTLY STABILIZED AND CERTIFIED AS SUCH BY ENGINEER, REMOVE TEMPORARY CONTROL MEASURES WHILE PROTECTING STABILIZED SURFACES.

1.02 SUBMITTALS

A. SUBMIT PRODUCT DATA, WARRANTY, AND TEST REPORTS AS INDICATED ON THE DRAWINGS.

B. SUBMIT SKETCH SHOWING LOCATIONS OF PROPOSED STOCKPILE AREAS, CONSTRUCTION ENTRANCES AND EROSION CONTROLS IF NOT SHOWN ON THE SITE PLAN OR DIFFERENT FROM THOSE LOCATIONS SHOWN ON THE SITE PLAN.

C. A SITE SPECIFIC SEQUENCE OF CONSTRUCTION FOR EACH PORTION OF THE SITE. NO PORTION OF THE SITE SHALL EXCEED FIVE (5) ACRES.

1.03 QUALITY ASSURANCE

A. COMPLY WITH GOVERNING CODES AND REGULATIONS. PROVIDE PRODUCTS FROM ACCEPTABLE MANUFACTURERS. USE EXPERIENCED INSTALLERS. DELIVER, HANDLE, AND STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. CONFORM TO CONDITIONS OF APPROVAL ISSUED BY REGULATORY AGENCIES INCLUDING, BUT NOT NECESSARILY LIMITED TO, LOCAL PLANNING BOARD, CONSERVATION COMMISSION, CITY COUNCIL, BOARD OF HEALTH, PUBLIC WORKS / HIGHWAY DEPARTMENT, STATE ENVIRONMENTAL PROTECTION DEPARTMENT, AND U.S. GOVERNMENT, ENVIRONMENTAL PROTECTION AGENCY. WHERE CONDITIONS OF REGULATORY APPROVAL DIFFER FROM REQUIREMENTS CONTAINED HEREIN OR ON THE DRAWINGS, COMPLY WITH THE MORE STRINGENT REQUIREMENT.

PART 2 – PRODUCTS

2.01 MATERIALS

A. STRAW BALES: WEED FREE DRY GRASS OR STRAW, MACHINE BOUND WITH JUTE OR WIRE, APPROXIMATE SIZE EACH BALE 42" X 16" X 16". EACH BALE SHALL BE STAKED WITH A MINIMUM OF TWO 24" LONG HARDWOOD STAKES. NOTE: HAY SHALL NOT BE USED.

B. STRAW WATTLES: NORTH AMERICAN GREEN MODEL WS1210 OR APPROVED EQUAL.

C. SILT FENCE: NON-WOVEN, UV-RESISTANT, POLYPROPYLENE FABRIC, FLOW RATED AT 10 GPM/50" MINIMUM, GRAB TENSILE RATED AT 124 POUNDS MINIMUM, WITH INTEGRAL STAKE LOOPS, AND HARDWOOD STAKES. USE NO. 2130 BY AMCO FABRICS & FIBERS, OR APPROVED EQUAL.

D. MULCH: ORGANICS INCLUDING STRAW, PROCESSED PINE / HEMLOCK TWIGS AND NEEDLES.

E. SEED MIXES: SHALL MEET THE REQUIREMENTS OF MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION SECTION 6.03.0 OR 6.03.1 AS APPROPRIATE.

F. EXCELSIOR BLANKET: CURLED WOOD FIBER ON PHOTODEGRADABLE EXTRUDED PLASTIC MATRIX, 80% OF FIBERS 6-INCHES LONG OR LONGER, WEIGHT 0.975 POUNDS / SY, CONTAINING NO CHEMICAL ADDITIVES. USE CURLEX I BLANKET BY AMERICAN EXCELSIOR COMPANY, OR APPROVED EQUAL.

G. ROCK RIPRAP: SOUND, ANGULAR, 6-INCH MINUS PROCESSED ROCK, BLAST ROCK, OR TAILINGS.

H. CRUSHED STONE: SOUND, ANGULAR, 2-INCH MINUS PROCESSED CRUSHED STONE.

PART 3 – EXECUTION

3.01 THROUGHOUT CONSTRUCTION

A. DEVISE WORK SEQUENCE SO AS TO LIMIT DRAINAGE AREA THAT IS TRIBUTARY TO DISTURBED AREAS. DEVISE, EMPLOY, AND MAINTAIN CONTROL MEASURES SUCH AS DIVERSION CHANNELS AND BERMS, STRATEGICALLY LOCATED STOCKPILES, AND SEDIMENT BASINS TO SUBDIVIDE DRAINAGE AREAS INTO SMALL, MANAGEABLE SUBAREAS, THEREBY MINIMIZING RUNOFF AND THE POTENTIAL FOR EROSION.

B. MAINTAIN BARRIER AT LIMIT OF WORK AND PROTECT EXISTING VEGETATION / FACILITIES OUTSIDE OF LIMIT OF WORK.

C. MAINTAIN SPARE MATERIAL STOCKPILES FOR IMMEDIATE EMPLOYMENT / REPAIR / EXPANSION OF CONTROL MEASURES. AT A MINIMUM, SUCH MATERIALS SHALL INCLUDE HAY BALES, SILT FENCE AND STAKES, AND CRUSHED STONE.

D. INSPECT AND MAINTAIN EFFECTIVENESS OF CONTROL MEASURES BY REPAIRING AS NECESSARY TO ENSURE INTENDED FUNCTION; BY SUPPLEMENTING AS NECESSARY FOR ADEQUATE EXTENT; BY REMOVING TRAPPED PRODUCTS OF EROSION AS NECESSARY TO MAINTAIN EFFECTIVE TRAP VOLUME.

E. LIMIT EXTENT OF WORK AREA SO THAT ALL DISTURBED AREAS CAN BE STABILIZED WITH CONTROL MEASURES WITHIN A 24-HOUR PERIOD.

F. INSTALL CONTROL MEASURES AS SOON AS PRACTICABLE AFTER EACH MANAGEABLE PORTION OF EARTHWORK IS COMPLETE. EMPLOY TEMPORARY MEASURES AS NECESSARY TO STABILIZE DISTURBED AREAS, EVEN WHERE SUBSEQUENT CONSTRUCTION OPERATIONS MAY REQUIRE RE-DISTURBANCE.

PART 3 – CONTINUED

G. WHEN INTENSE RAINFALL IS EXPECTED, CONSIDER, DEVISE, AND EMPLOY REINFORCING CONTROL MEASURES PRIOR TO THE RAINFALL EVENT TO MEET THE REQUIREMENTS DESCRIBED IN 1.01.A. IF NECESSARY, EMPLOY TEMPORARY CONTROL MEASURES ON MATERIAL STOCKPILES TO COUNTERACT POTENTIAL SEDIMENT TRANSPORT DURING INTENSE RAINFALL.

H. WHEN VEHICLE REFUELING IS REQUIRED ON SITE, CONDUCT REFUELING OPERATIONS OUTSIDE OF ENVIRONMENTALLY SENSITIVE AREAS.

I. PROPERLY DISPOSE OF DEBRIS, SOLID WASTE, TRASH, AND CONSTRUCTION WASTE / BYPRODUCTS OFF SITE.

J. SWEEP ON-SITE PAVED AREAS AND OFF-SITE STREETS AS NECESSARY TO PREVENT SILT AND DEBRIS ORIGINATING ON SITE FROM ENTERING CLOSED DRAINAGE SYSTEMS AND / OR ENVIRONMENTALLY SENSITIVE AREAS. WHEN NECESSARY UTILIZE WATER SPRAYING, SURFACE ROUGHENING AND/OR APPLY POLYMERS, SPRAY-ON TACKIFIERS, CHLORIDES AND BARRIERS FOR DUST CONTROL.

K. INSPECT EROSION CONTROLS DAILY THROUGHOUT CONSTRUCTION REPAIR DAMAGED CONTROLS IMMEDIATELY.

3.02 SITE PREPARATION AND ACCESS

A. WALK SITE AND IDENTIFY LOCATIONS OF LIMIT OF WORK AND ENVIRONMENTALLY SENSITIVE AREAS. ESTABLISH CONSTRUCTION STAGING AREA, LOCATED BEYOND ENVIRONMENTALLY SENSITIVE AREAS.

B. INSTALL CONTROL MEASURES AS SHOWN ON THE DRAWINGS, INCLUDING THOSE DEFINING THE LIMIT OF WORK.

C. LIMIT VEHICULAR TRAFFIC TO AND FROM SITE TO MINIMIZE TRANSPORT OF SEDIMENT.

3.03 CLEARING, GRUBBING, AND STRIPPING

A. SCHEDULE GRUBBING AND STRIPPING TO OCCUR IMMEDIATELY PRIOR TO EARTH DISTURBANCE. DEPENDING ON SITE AREA, CONSIDER MULTIPLE GRUBBING PHASES, SEQUENCED TO TAKE ADVANTAGE OF THE EROSION PREVENTION POTENTIAL OF EXISTING VEGETATIVE COVER.

B. MINIMIZE THE AREA OF EXISTING VEGETATION REMOVED WHEREVER POSSIBLE. NO GREATER THAN FIVE (5) ACRES SHALL BE UNSTABLE AT ANY TIME.

C. LOCATE AND SIZE STOCKPILES TO MINIMIZE EROSION POTENTIAL, TAKING ADVANTAGE OF TERRAIN SLOPE AND ASPECT, WHERE APPROPRIATE.

D. PROTECT VEGETATION, INCLUDING ROOT SYSTEMS, BEYOND LIMIT OF CLEARING.

E. PROCESS TIMBER, STUMPS, SLASH, AND BRUSH SO AS TO PROTECT ENVIRONMENTALLY SENSITIVE AREAS AND INSTALLED CONTROL MEASURES. PROPERLY DISPOSE OF EXCESS OFF SITE. BURIAL OF STUMPS ON SITE IS PROHIBITED.

3.04 EXCAVATION FOR BUILDING FOUNDATIONS AND UTILITIES

A. DEVISE AND INSTALL CONTROL MEASURES ADEQUATE TO HANDLE DISCHARGES AND TRAP SEDIMENT FROM FOOTING SUMP AND WELL POINT PUMPS PRIOR TO EXCAVATION.

B. ARMOR SUMP PUMP DISCHARGE LOCATIONS TO PREVENT EROSION AT POINT OF DISCHARGE AND AREAS DOWNSTREAM.

C. IF FOUNDATION EXCAVATIONS GRADE TO DAYLIGHT ON THE LOW SIDE, DEVISE AND INSTALL CONTROL MEASURES TO HANDLE SURFACE AND GROUNDWATER FLOW FROM EXCAVATION LOW POINT.

D. STOCKPILE EXCAVATED MATERIALS TO BAFFLE OVERLAND RUNOFF, AVOIDING THE CREATION OF LENGTHY PATHS OF CONCENTRATED RUNOFF. STOCKPILE SLOPES SHALL NOT EXCEED 2:1.

E. BACKFILL UTILITY TRENCHES AS SOON AS PRACTICABLE TO PREVENT FLOODING, SLOUGHING, POTENTIAL OVERFLOW, AND REPETITIVE EARTH DISTURBANCE.

3.05 SITE GRADING

A. WHERE APPLICABLE, FOLLOW EXCAVATION AND FILL PRACTICES SHOWN ON DRAWINGS TO LOCALIZE AND MINIMIZE EROSION.

B. MONITOR SEDIMENT VOLUME IN TEMPORARY SEDIMENT BASINS AND AT DIVERSION BERMS AND CHECK DAMS IN ALL AREAS EXCEPT THOSE THAT DO NOT PRESENT POTENTIAL PROBLEMS WITH REGARD TO FUTURE SOIL STABILITY, DRAINAGE, OR BEARING CAPACITY. REMOVE AND PROPERLY DISPOSE OF TRAPPED SEDIMENT BEFORE BRINGING SITE TO FINAL SUBGRADE.

C. EXPOSED SOILS SHALL BE PERMANENTLY STABILIZED WITHIN FIVE (5) BUSINESS DAYS OF COMPLETION OF CONSTRUCTION OF A GIVEN AREA. EXPOSED AREAS WHERE NO WORK HAS OCCURRED FOR FOURTEEN (14) DAYS SHALL BE TEMPORARILY STABILIZED WITH HYDROSEED OR OTHER APPROVED METHOD.

D. SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED IMMEDIATELY AFTER COMPLETION.

3.06 LANDSCAPING

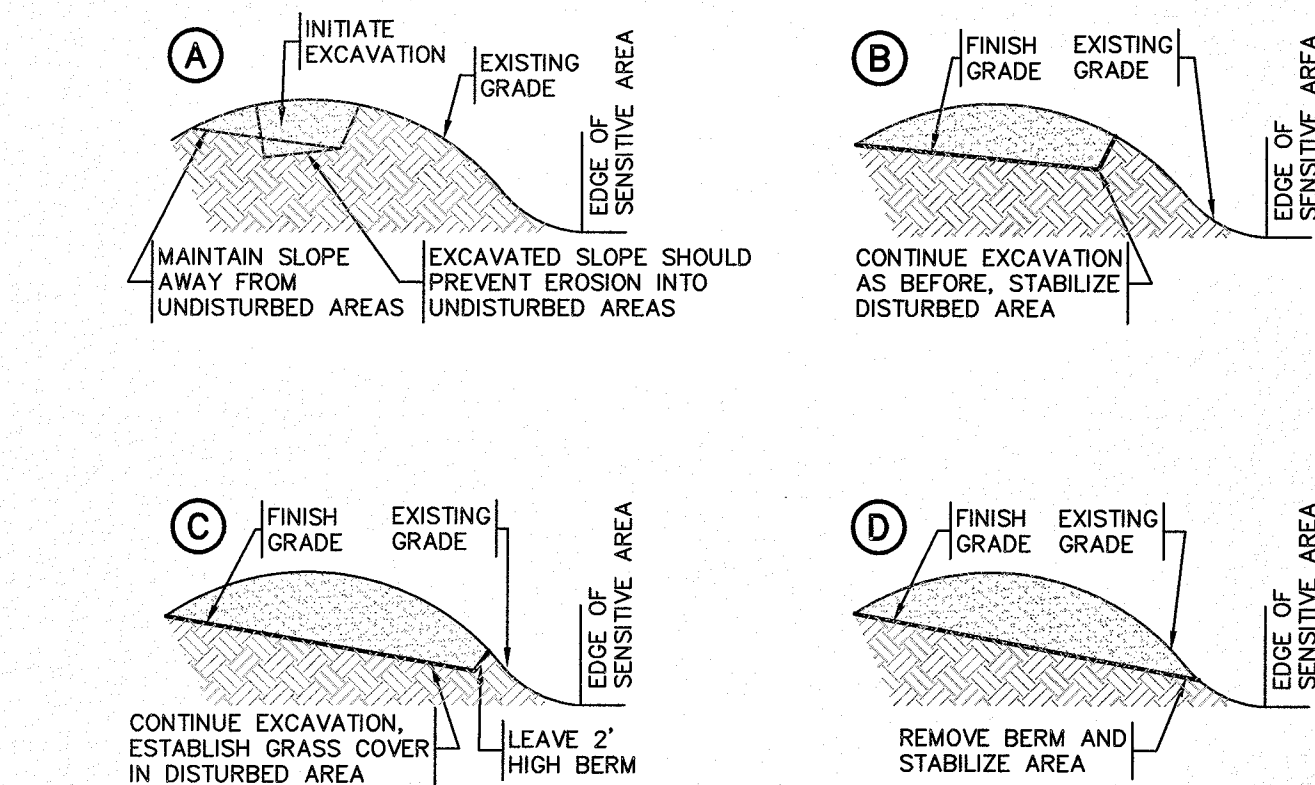
A. COMPLETE LANDSCAPING AS SOON AS POSSIBLE AFTER COMPLETION OF FINAL SUBGRADE.

B. IMMEDIATELY AFTER PLACEMENT OF TOPSOIL, STABILIZE WITH CONTROL MEASURES INCLUDING, BUT NOT NECESSARILY LIMITED TO, SEED MIX, MULCH, AND / OR BLANKET.

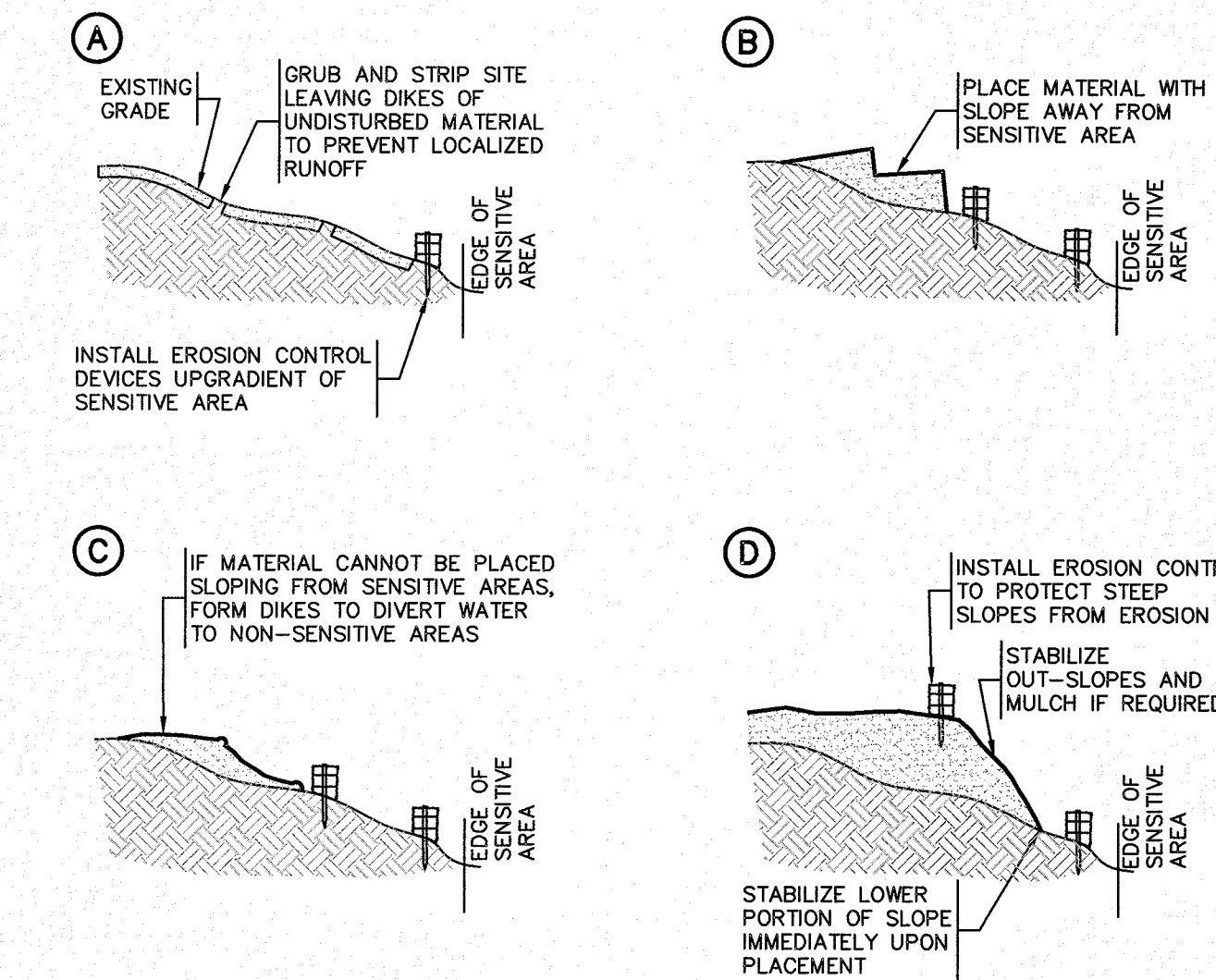
C. PERMANENT SEEDING MAY BE PERFORMED IN THE SPRING PRIOR TO JULY 1 AND IN BETWEEN AUGUST 1 AND OCTOBER 15. PERMANENT SEEDING AT OTHER TIMES SHALL BE APPROVED AND SHALL ONLY BE ALLOWED WITH AN APPROVED MULCHING AND IRRIGATION PROGRAM.

GENERAL SEQUENCE OF CONSTRUCTION

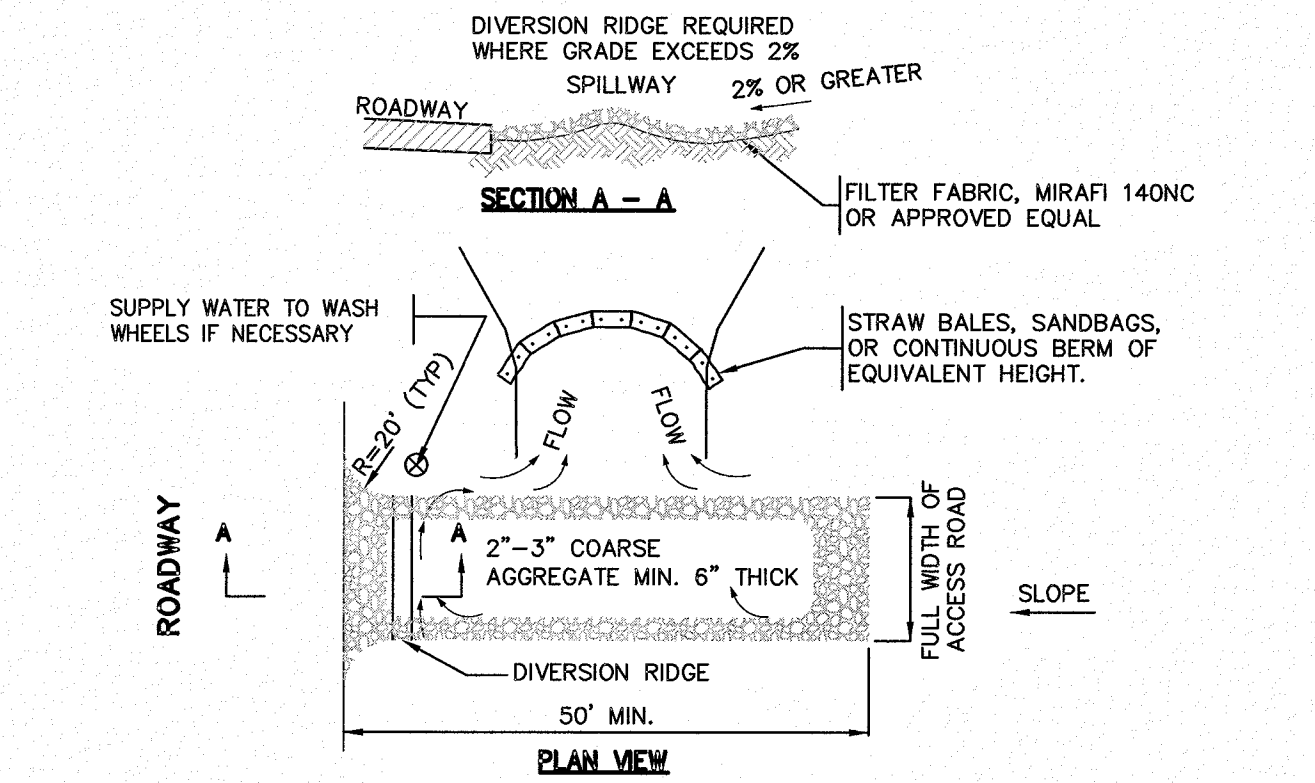
1. PLACE LIMIT OF WORK BARRIERS, FENCES, CONSTRUCTION ENTRANCES AND REQUIRED FENCING & SIGNS.
2. CONSTRUCT SEDIMENT TRAPS & BARRIERS AND PLACE OTHER CONTROLS, DIVERSION TRENCHES, PERIMETER DIKES, WATER BARS & OUTLET PROTECTION.
3. ESTABLISH STOCKPILE AND STAGING AREAS.
4. CUT TREES AND SHRUBS AND REMOVE FROM SITE OR STOCKPILE AND PROTECT STOCKPILE(S) BY APPROVED METHODS.
5. EXCAVATE STUMPS AND REMOVE FROM SITE OR STOCKPILE AND PROTECT STOCKPILE(S) BY APPROVED METHODS.
6. INSTALL DRAINAGE SWALES BEGINNING WITH DETENTION AREAS. CLEAR, ROUGH GRADE & STABILIZE SLOPES BETWEEN JULY 1ST AND SEPTEMBER 15TH.
7. BEGIN EARTHWORKS, ESTABLISH, STABILIZE AND PROTECT OUT AND FILL SLOPES.
8. BEGIN INSTALLATION OF OTHER UTILITIES. ESTABLISH COVER, STABILIZE AND PROTECT AREAS DISTURBED FOR UTILITY INSTALLATION.
9. BEGIN EXCAVATION FOR STRUCTURES, STOCKPILE AND PROTECT EXCAVATED MATERIALS.
10. BACKFILL FOUNDATIONS STABILIZE ALL DISTURBED AREAS AND REMOVE EXCESS SOIL FROM SITE.
11. PERFORM SITE WORK IN ACCORDANCE WITH "EROSION AND SEDIMENT CONTROL REQUIREMENTS, PART 3 – EXECUTION".
12. VERIFY ALL AREAS HAVE BEEN STABILIZED, RE-SEED EXPOSED SOILS.
13. CLEAN INFILTRATION AREA, CLEAN CATCH BASINS AND STORM DRAINS. REMOVE SOILS FROM SITE.
14. REMOVE ALL EROSION CONTROLS, LIMIT OF WORK BARRIERS, FENCES, CONSTRUCTION ENTRANCES, SIGNS AND SWEEP PAVED AREAS.



1 EXCAVATION PROCEDURE  
SCALE: N.T.S.

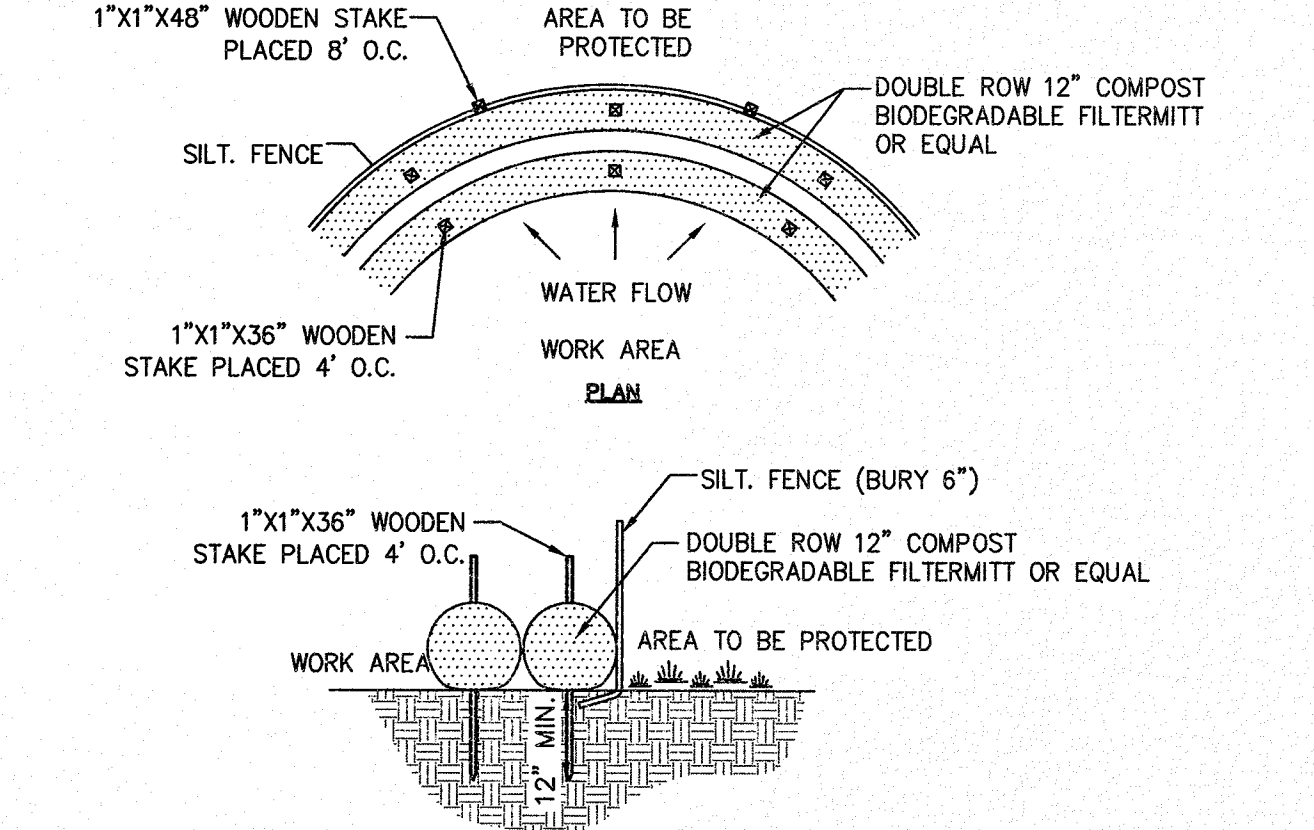


3 FILL PROCEDURE  
SCALE: N.T.S.

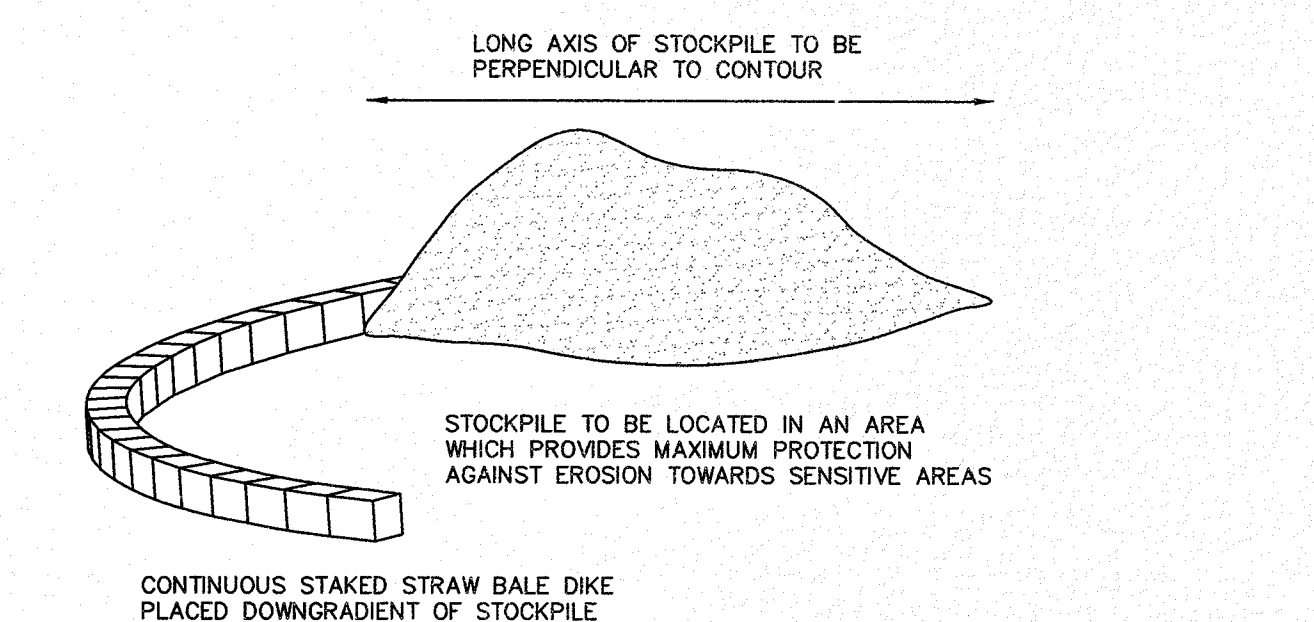


NOTES:  
[1] THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.  
[2] WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.  
[3] WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.  
[4] USE SANDBAGS, STRAW BALES OR OTHER APPROVED METHODS TO CHANNELIZE RUNOFF TO BASIN AS REQUIRED.

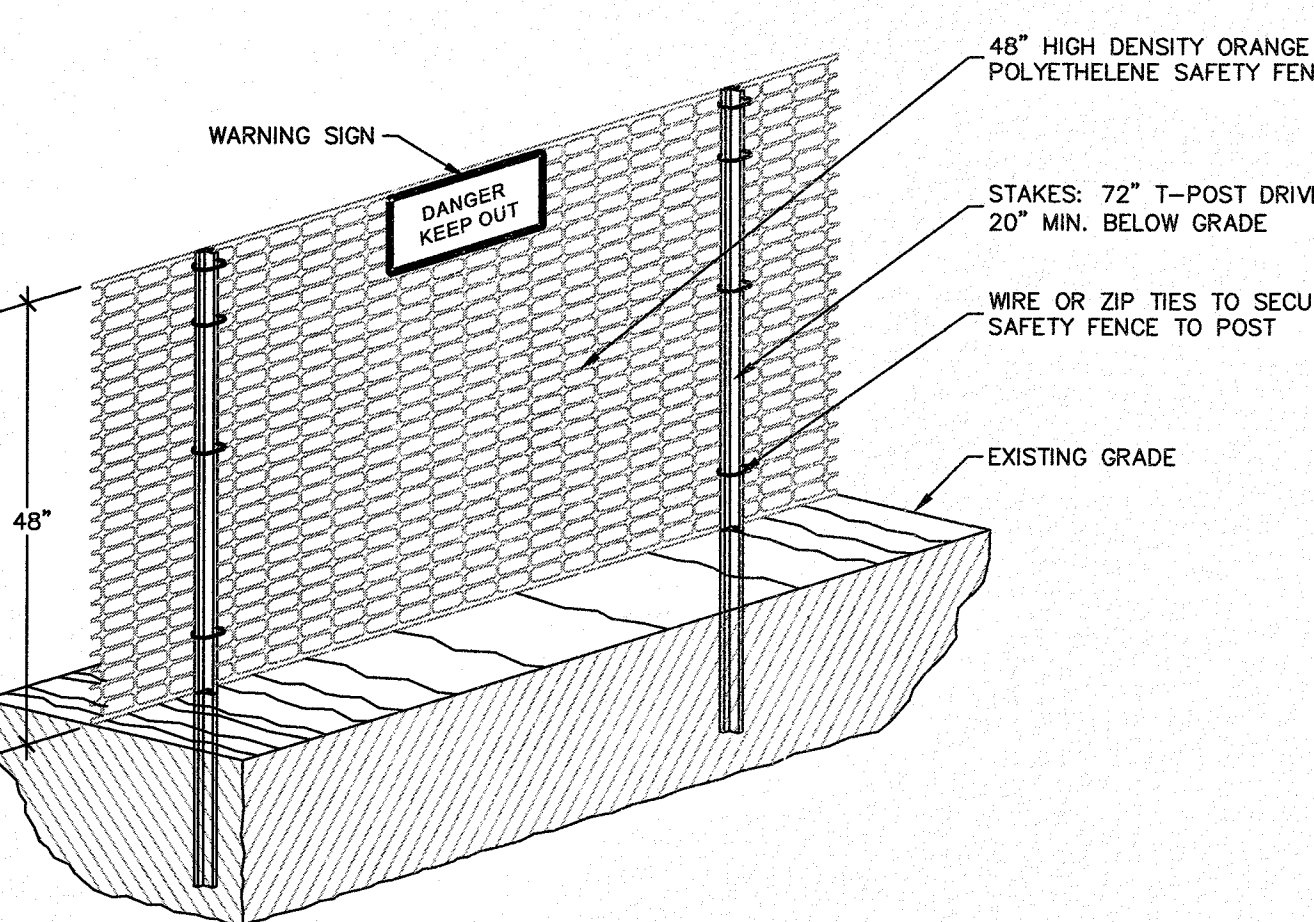
5 CONSTRUCTION ENTRANCE  
SCALE: N.T.S.



2 EROSION CONTROL BARRIER (ECB)  
SCALE: N.T.S.



4 TEMPORARY STOCKPILE  
SCALE: N.T.S.



NOTES:  
[1] ALL ACTIVE CONSTRUCTION AREAS SHALL BE PROTECTED PER PLAN.  
[2] SAFETY FENCE SHALL BE FASTENED SECURELY TO T-POSTS.  
[3] FENCING MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE SAFETY FENCE MUST BE APPROVED.  
[4] "DANGER KEEP OUT" SIGNS TO BE SPACED AT 100 FOOT INTERVALS.

6 CONSTRUCTION SAFETY FENCE  
SCALE: N.T.S.

**ASE**  
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Uxbridge, Massachusetts 01569  
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500 East Washington Street  
North Attleboro, Massachusetts 02760  
P: 508-316-0452 F: 508-316-0963

APPROVAL UNDER SITE PLAN REVIEW.  
FRANKLIN PLANNING BOARD

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AND NO APPEAL WAS RECEIVED DURING THE 20 DAYS NEXT AFTER SUCH RECEIPT OF SAID NOTICE.

FRANKLIN TOWN CLERK DATE

PROJECT: LARGE-CAPACITY GROUND MOUNTED SOLAR ENERGY SYSTEM  
MOUNTED SOLAR ENERGY SYSTEM  
SPRING STREET  
FRANKLIN, MA  
APPLICANT: SPRING ST. RENEWABLES, LLC  
101 SUMMER STREET  
BOSTON, MA 02110

REVISIONS		
NO.	DATE	DESCRIPTION

GRAPHIC SCALE

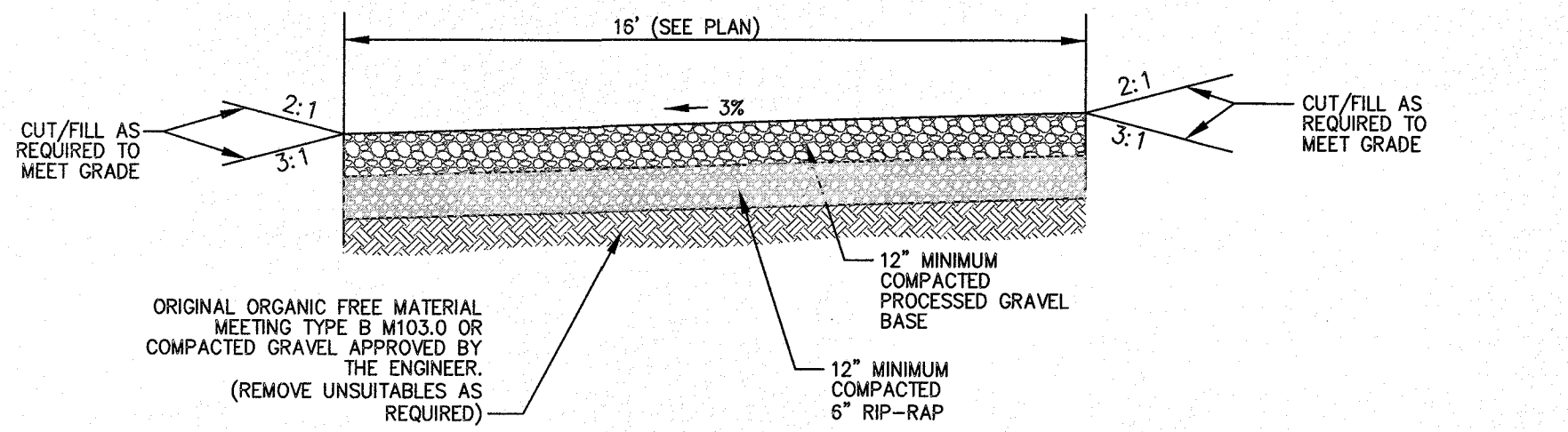
SHEET TITLE

EROSION & SEDIMENT CONTROL  
NOTES & DETAILS

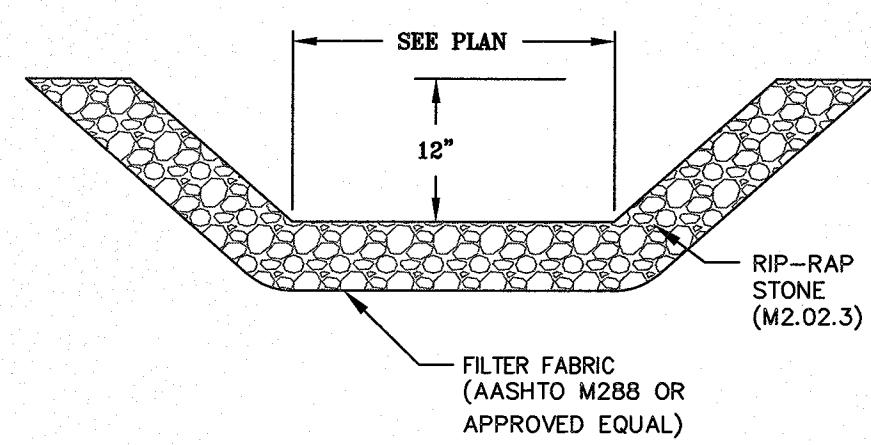
Professional Engineer Seal for Richard M. Manville, Civil Engineer, No. 26523, State of Massachusetts.

DES BY: KNP DATE: NOVEMBER 21, 2018  
CHK BY: RMM PROJECT NO.: 2018-101

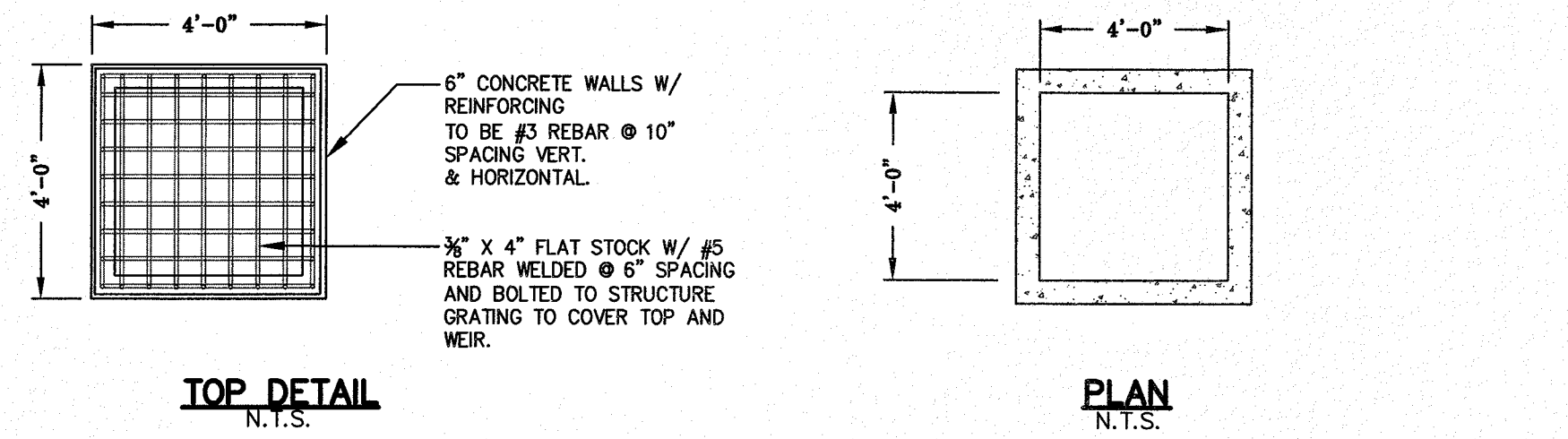




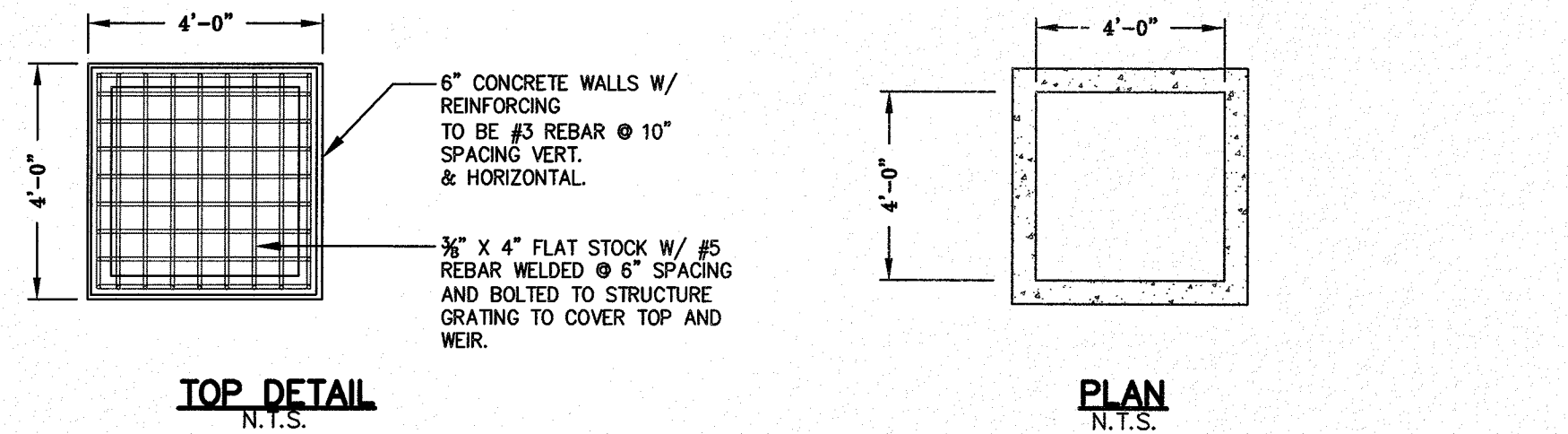
**1 GRAVEL ROADWAY CROSS-SECTION**  
SCALE: N.T.S.



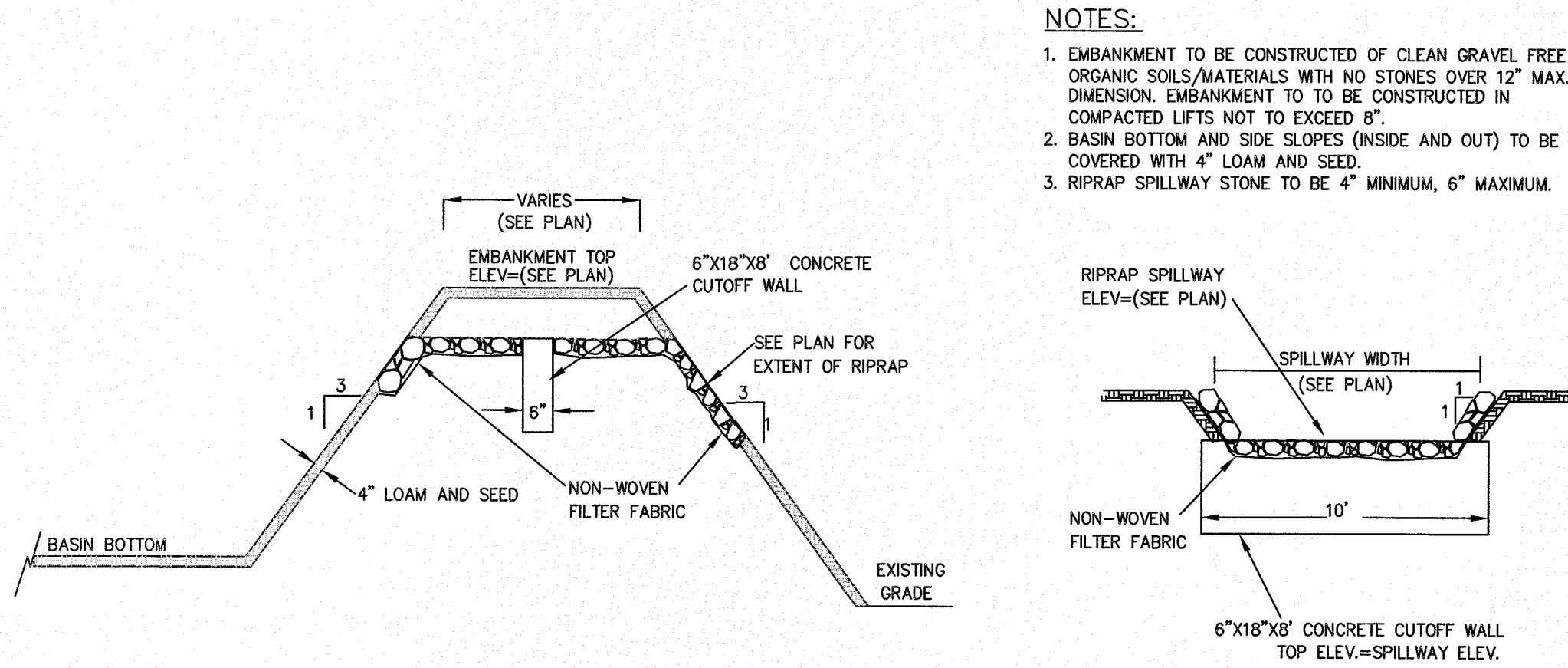
**5 STONE RIP-RAP EMERGENCY SPILLWAY**  
SCALE: N.T.S.



**9 OUTLET STRUCTURE (OS1) - ORIFICE/GRATE DETAIL**  
SCALE: N.T.S.

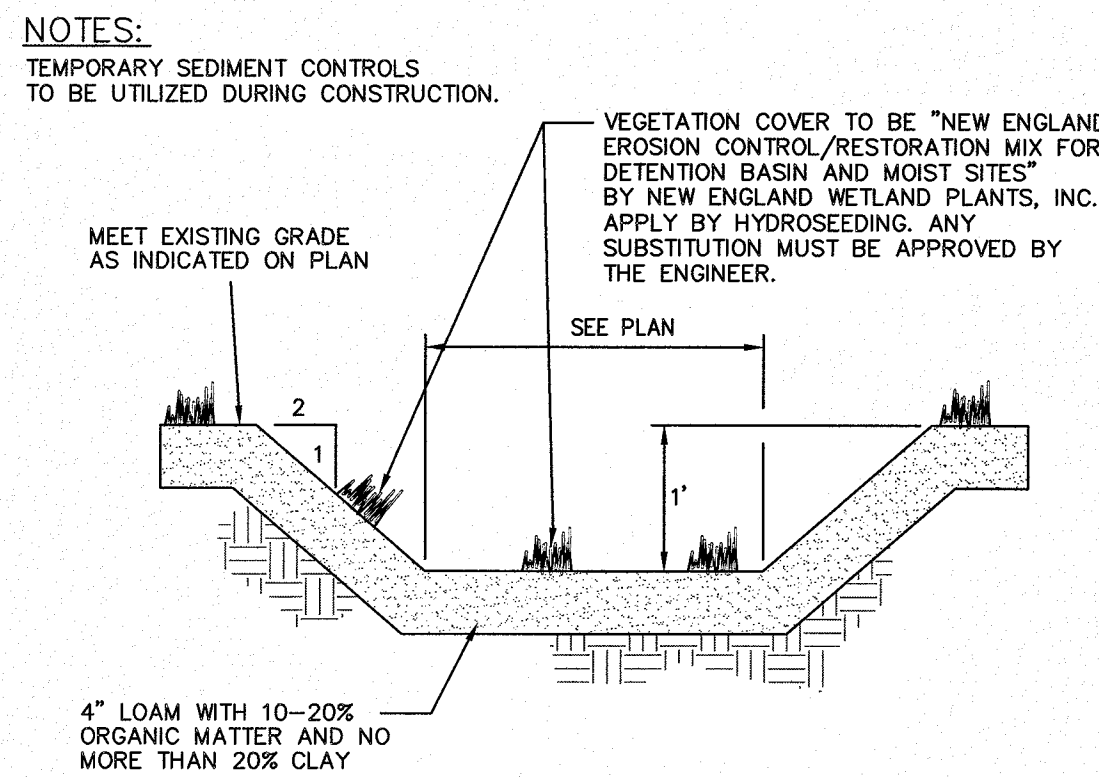


**10 OUTLET STRUCTURE (OS2) - ORIFICE/GRATE DETAIL**  
SCALE: N.T.S.

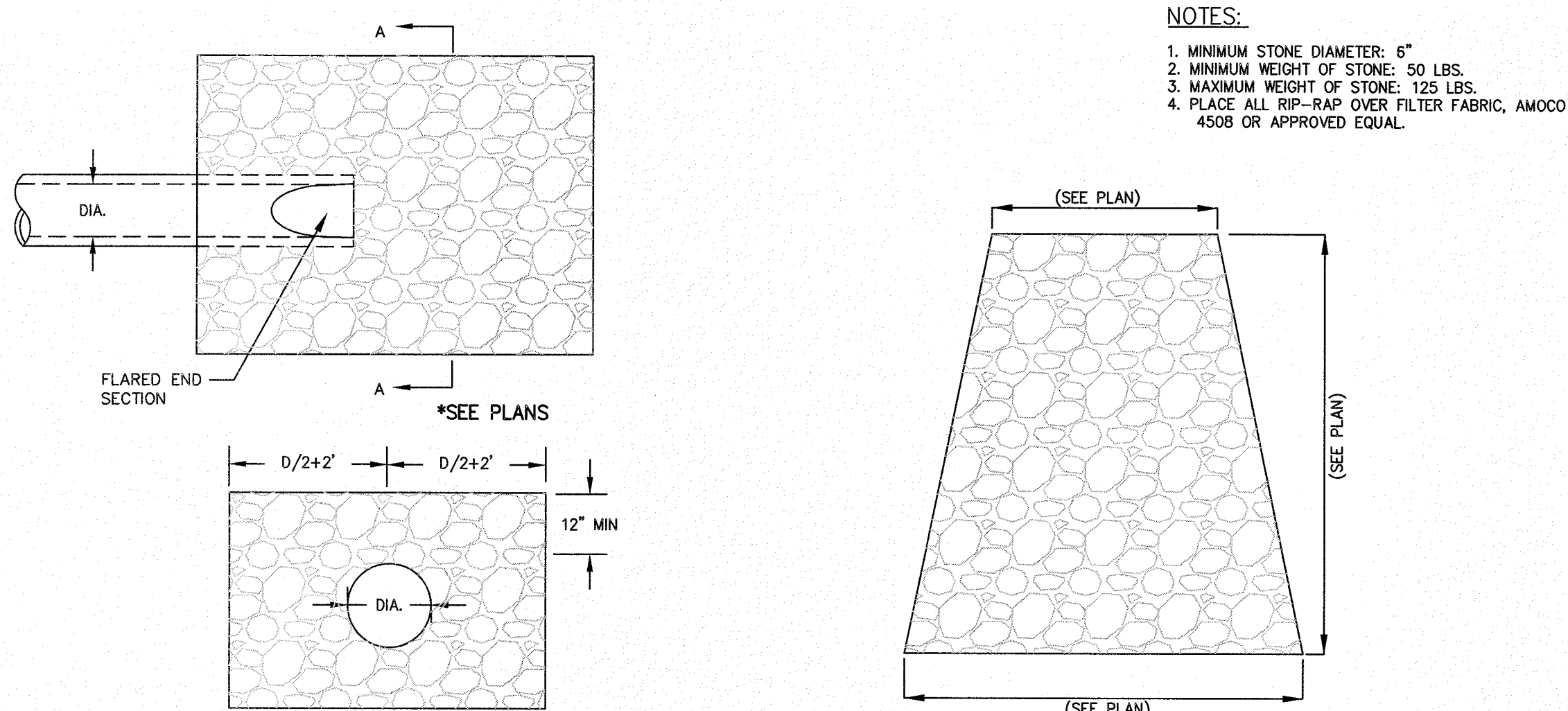


**2 TYPICAL EMBANKMENT/SPILLWAY**  
SCALE: N.T.S.

**SPILLWAY PROFILE**

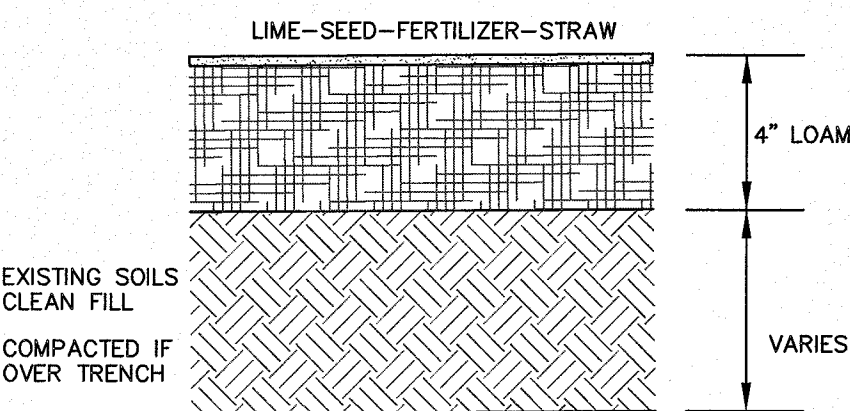


**6 GRASS SWALE**  
SCALE: N.T.S.

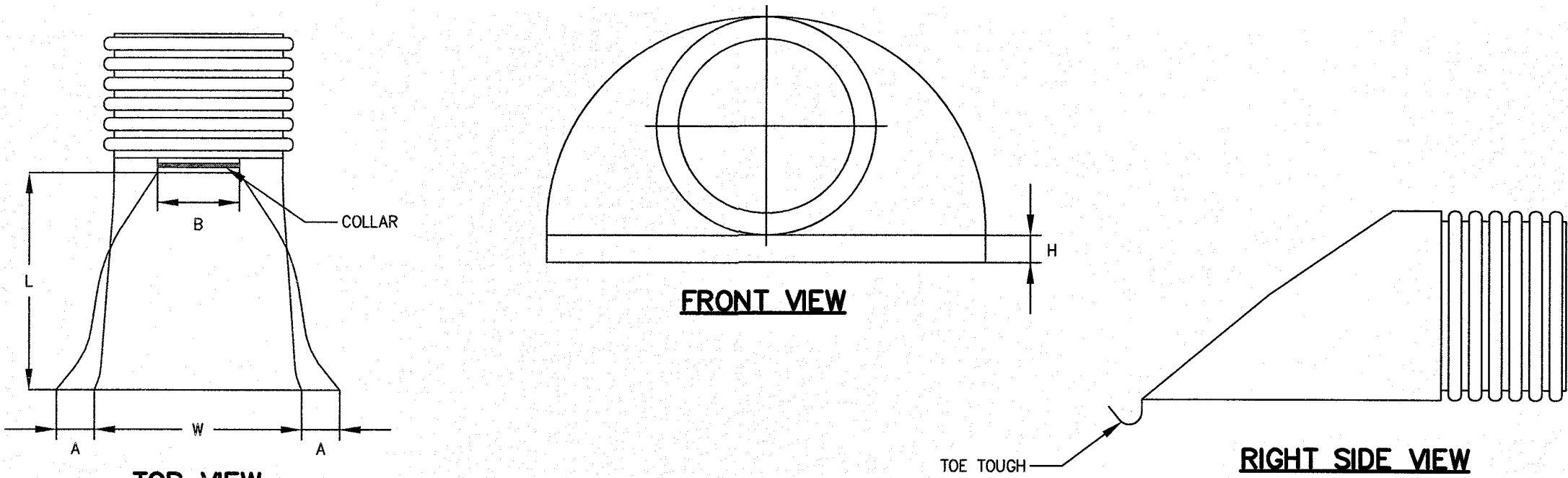


**3 STONE RIP-RAP FOR PIPE ENDS**  
SCALE: N.T.S.

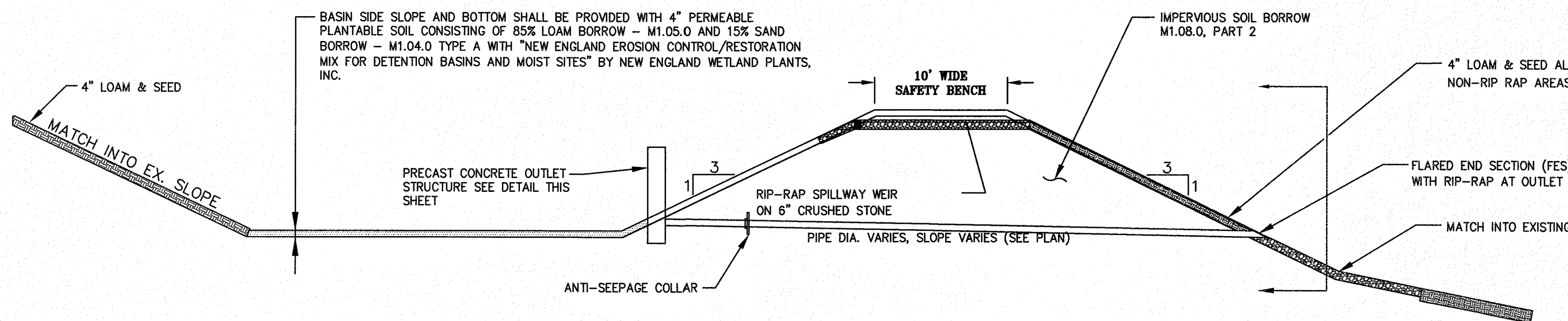
**TYPICAL OUTFALL RIP-RAP APRON**



**7 LOAM & SEED DETAIL**  
SCALE: N.T.S.



**4 FLARED-END SECTION**  
SCALE: N.T.S.



**8 STORMWATER BASIN**  
SCALE: N.T.S.



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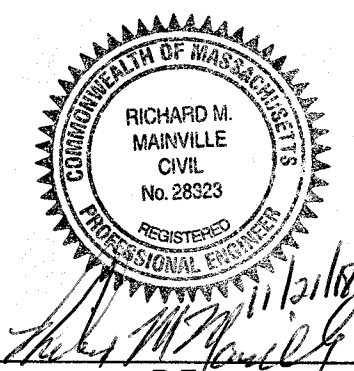
PROJECT: LARGE-CAPACITY GROUND  
MOUNTED SOLAR ENERGY SYSTEM  
SPRING STREET  
FRANKLIN, MA  
APPLICANT: SPRING ST. RENEWABLES, LLC  
101 SUMMER STREET  
BOSTON, MA 02110

REVISIONS		
NO.	DATE	DESCRIPTION

GRAPHIC SCALE

SHEET TITLE

**CONSTRUCTION  
DETAILS**



DES BY: KNP DATE: NOVEMBER 21, 2018  
CHK BY: RMM PROJECT NO: 2018-101

**4.1**

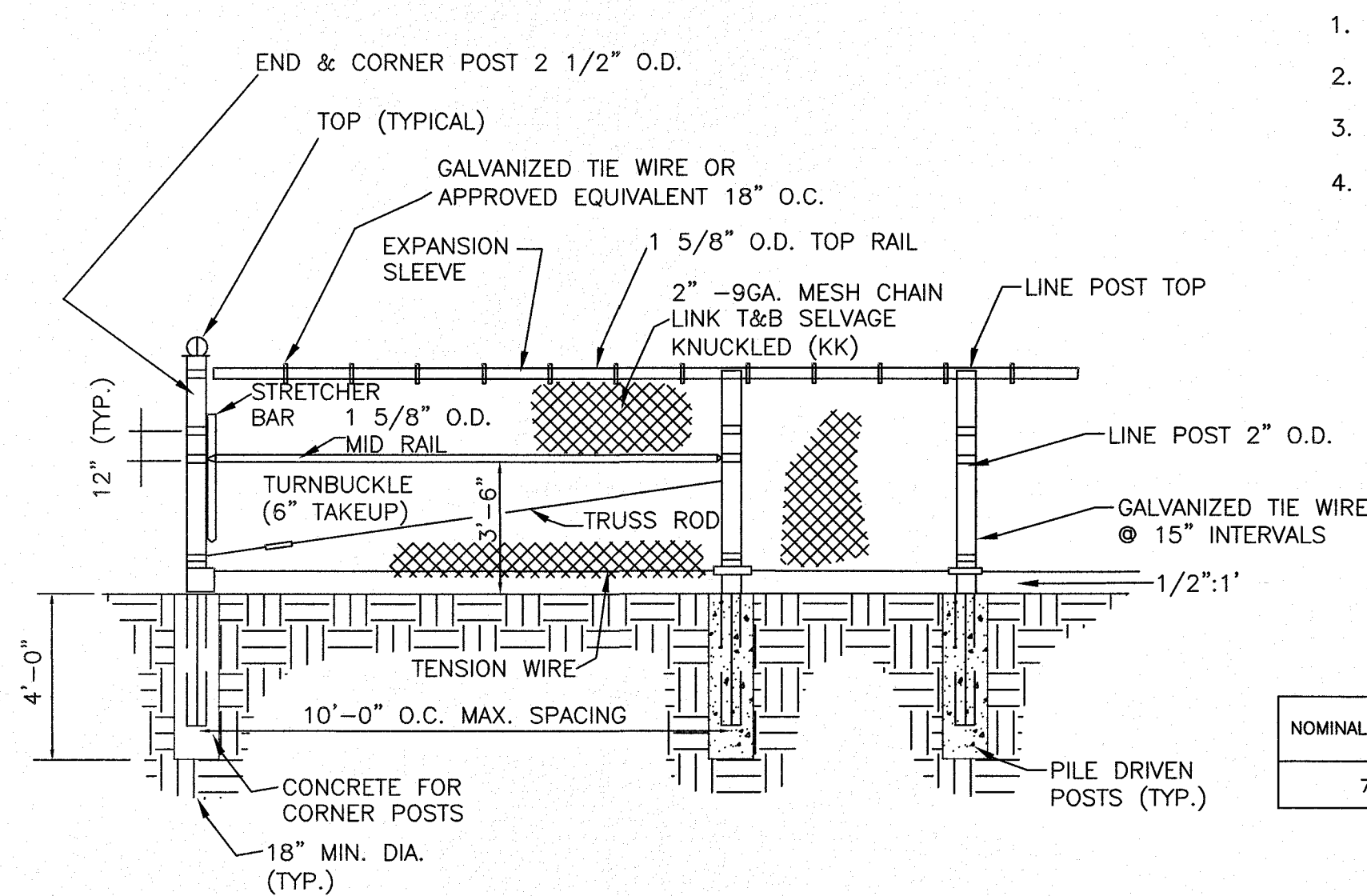
PLAN NO. L-5691



F:\ACAD\2018 PROJECTS\2018-101\DWG\PERMIT\2018-101\_SP.DWG 11-21-18 3:55:02 PM - LAYOUT 4.2

### 1 SECURITY FENCE

SCALE: N.T.S.



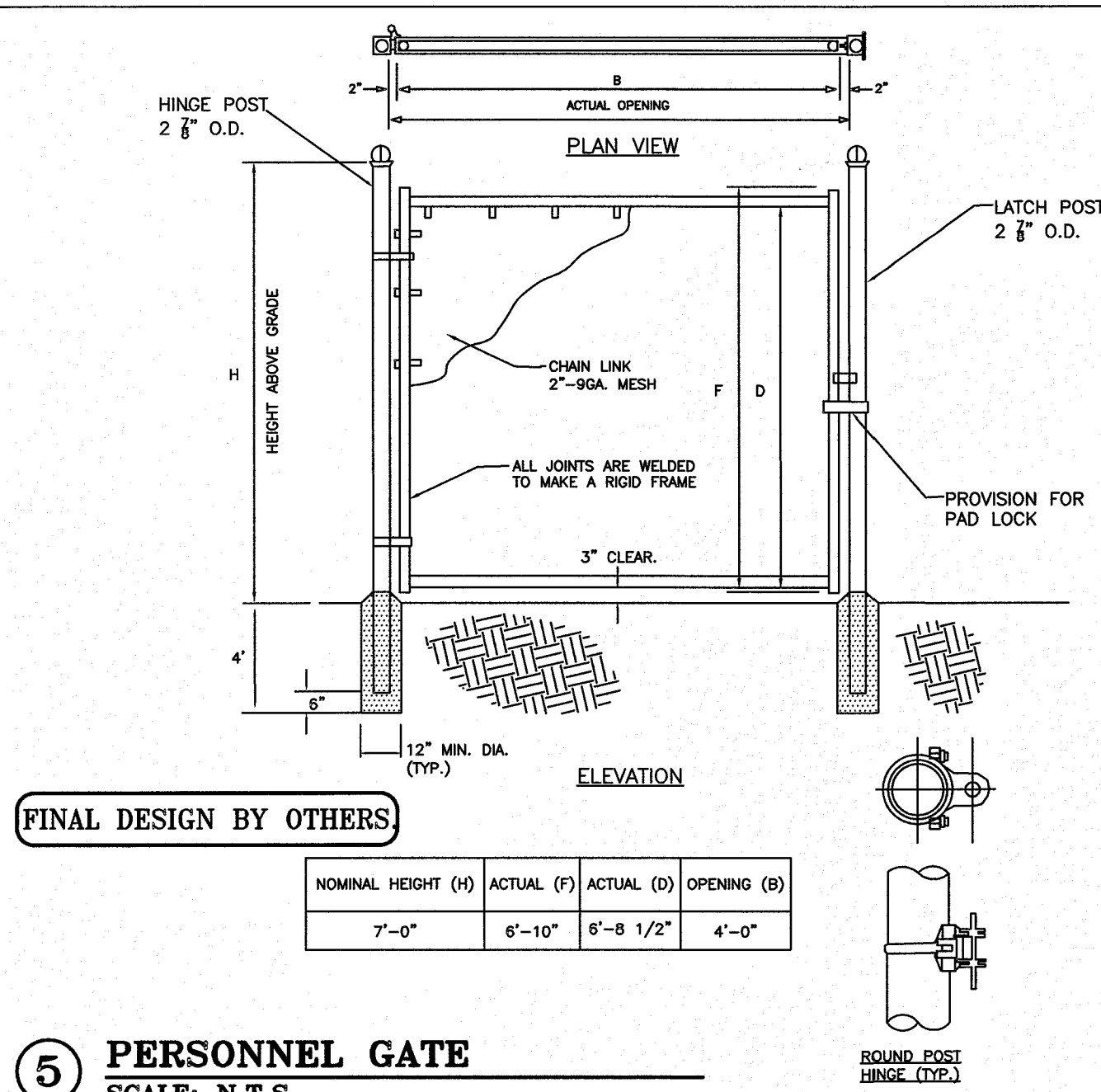
1. ALL FENCING AND HARDWARE SHALL BE GALVANIZED.
2. CORNER POSTS SHALL BE SET IN CONCRETE.
3. MID RAIL AT ANGLES AND CURVES ONLY.
4. FENCES TO HAVE 6" AVERAGE SEPARATION FROM BOTTOM OF CHAIN LINK FENCE TO FINISHED GRADE

NOMINAL HEIGHT (H)	ACTUAL (F)	ACTUAL (D)
7'-0"	6'-10"	6'-8 1/2"

FINAL DESIGN BY OTHERS

### 5 PERSONNEL GATE

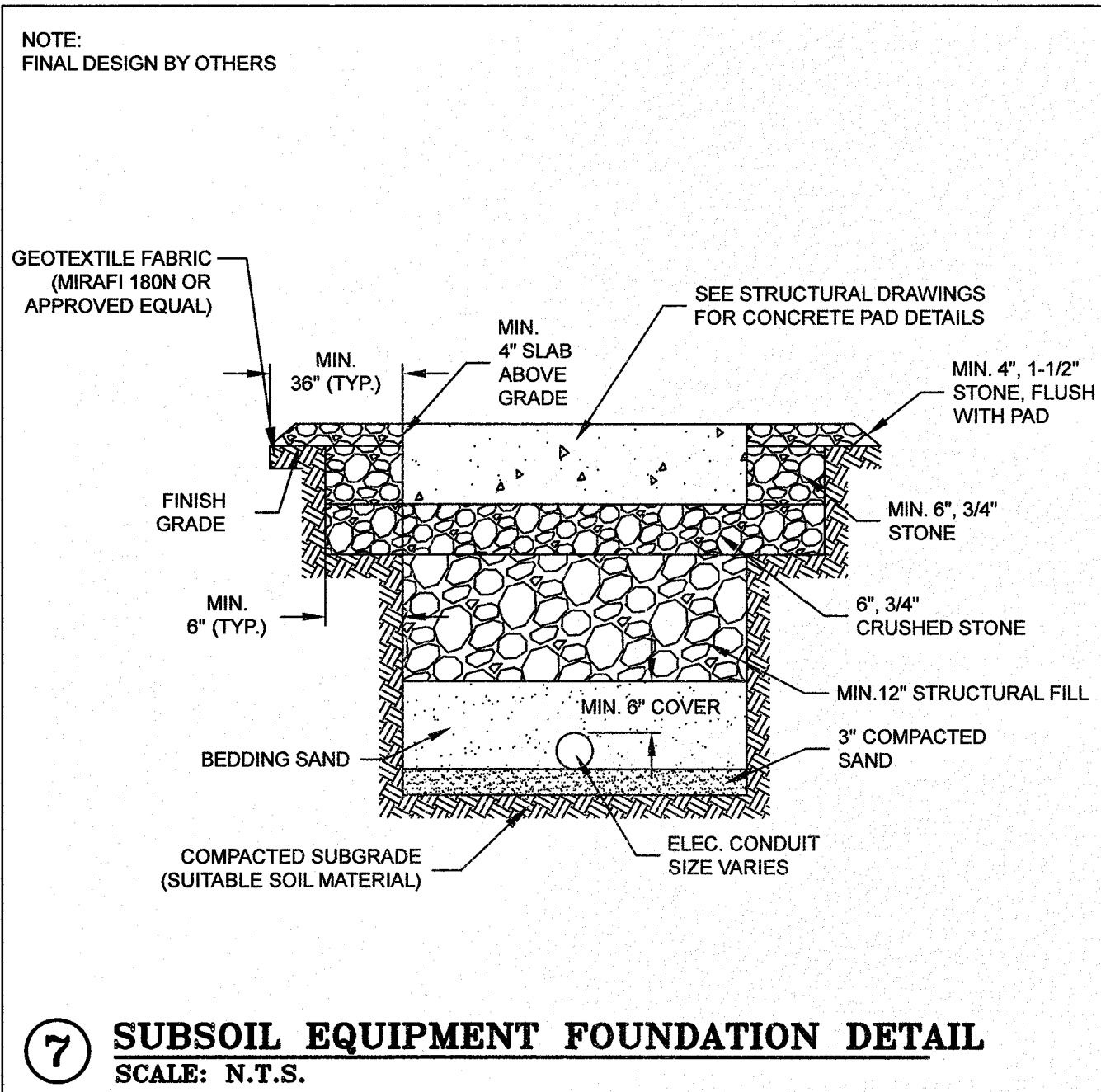
SCALE: N.T.S.



FINAL DESIGN BY OTHERS

### 7 SUBSOIL EQUIPMENT FOUNDATION DETAIL

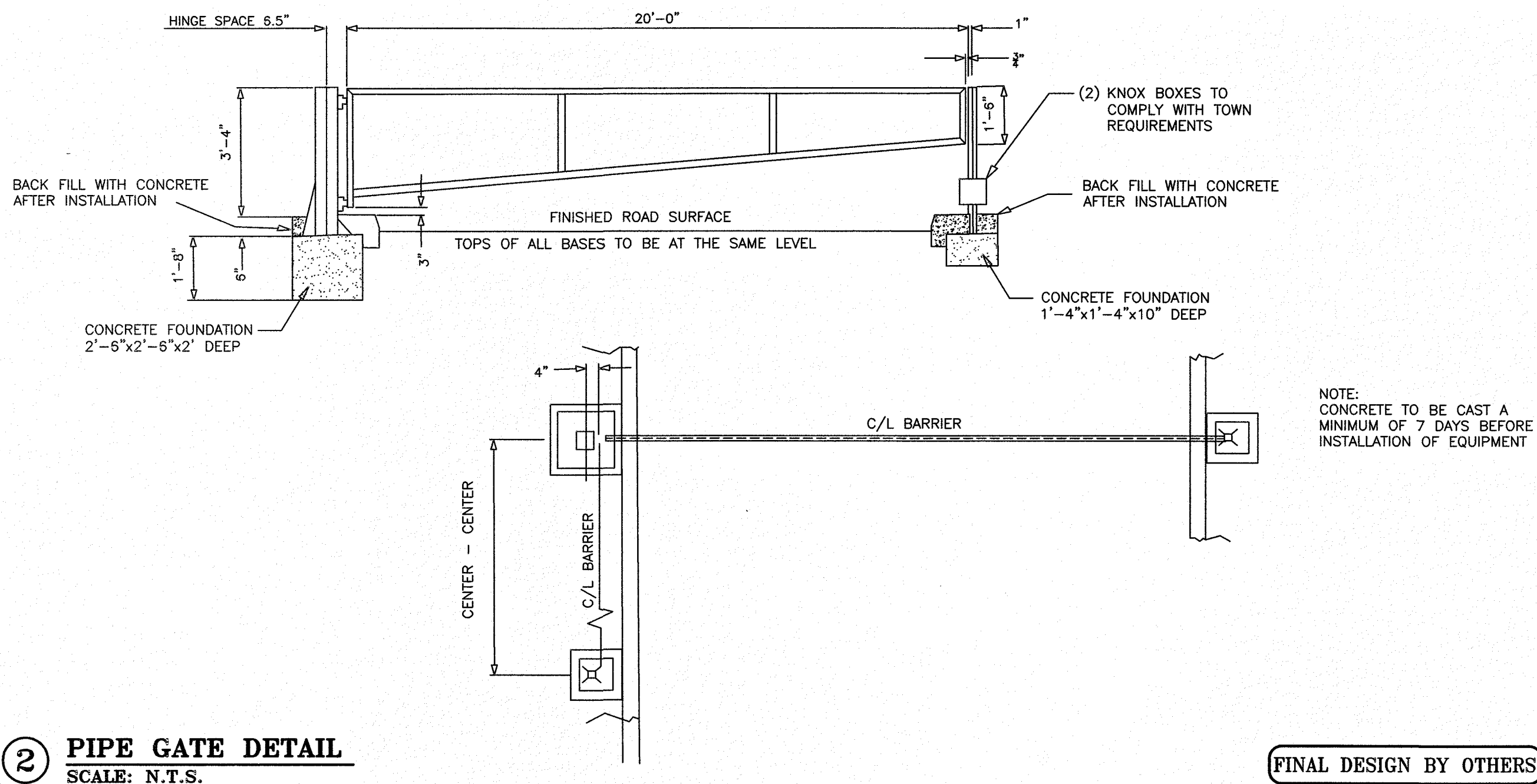
SCALE: N.T.S.



FINAL DESIGN BY OTHERS

### 2 PIPE GATE DETAIL

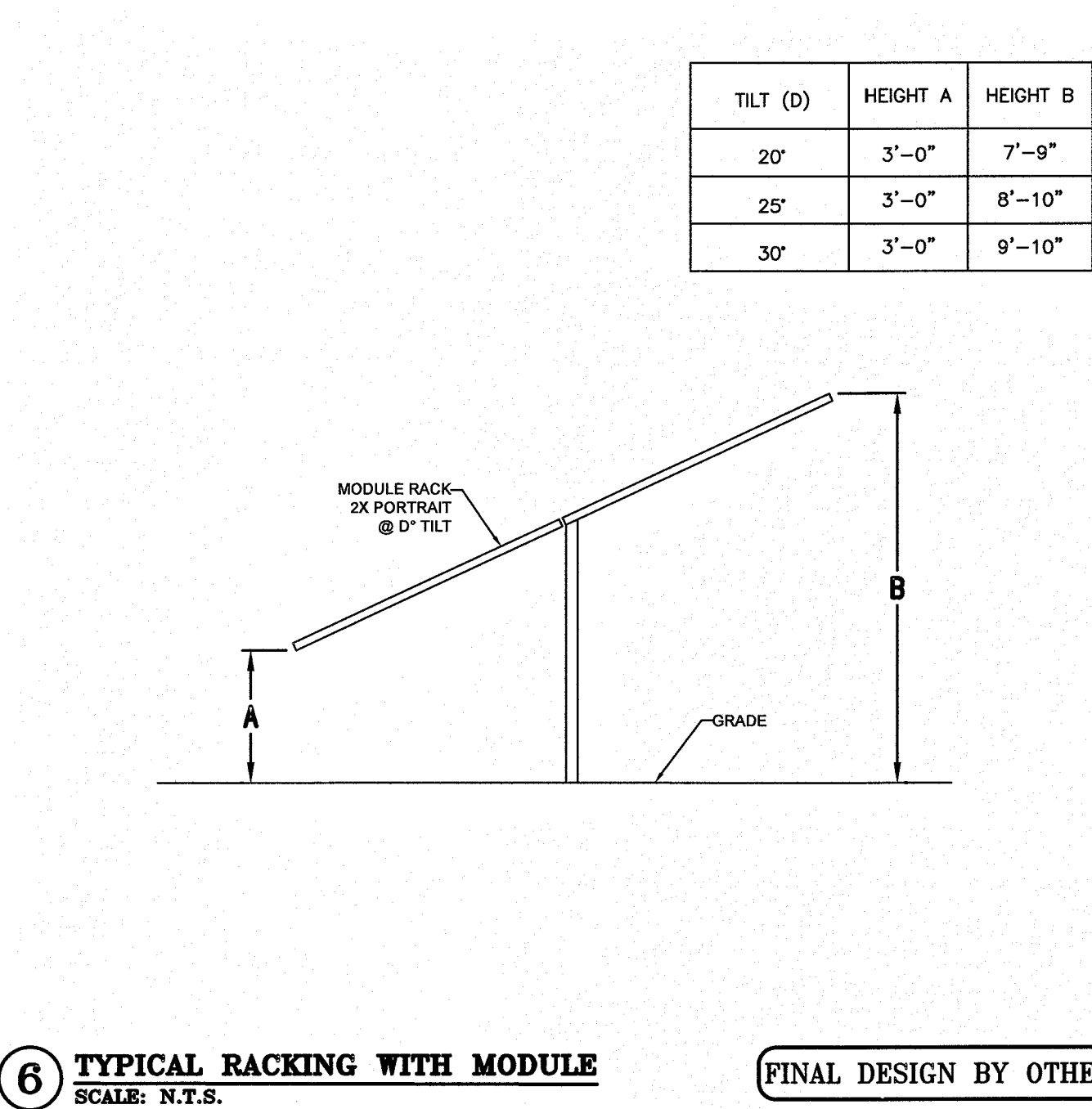
SCALE: N.T.S.



FINAL DESIGN BY OTHERS

### 6 TYPICAL RACKING WITH MODULE

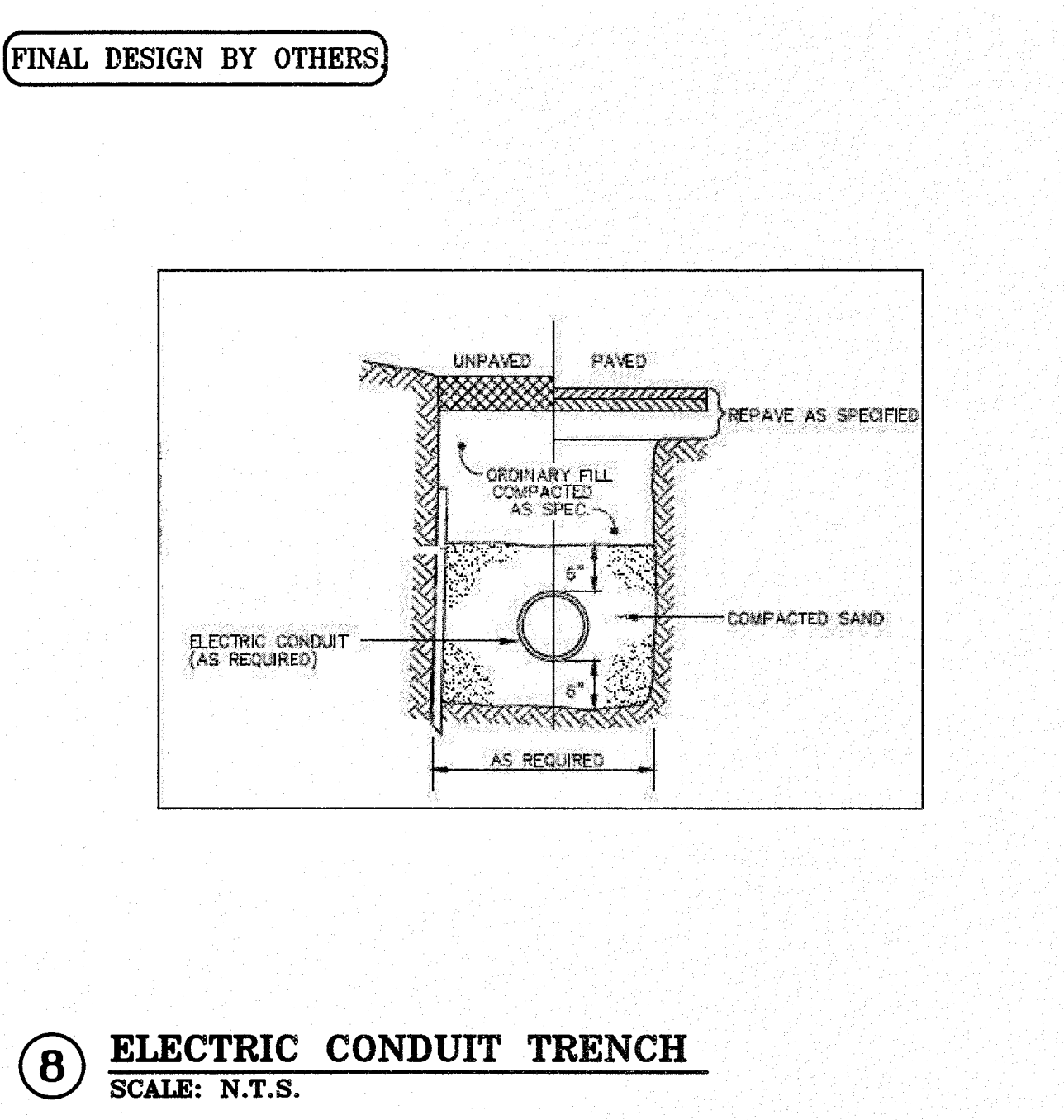
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FINAL DESIGN BY OTHERS

### 8 ELECTRIC CONDUIT TRENCH

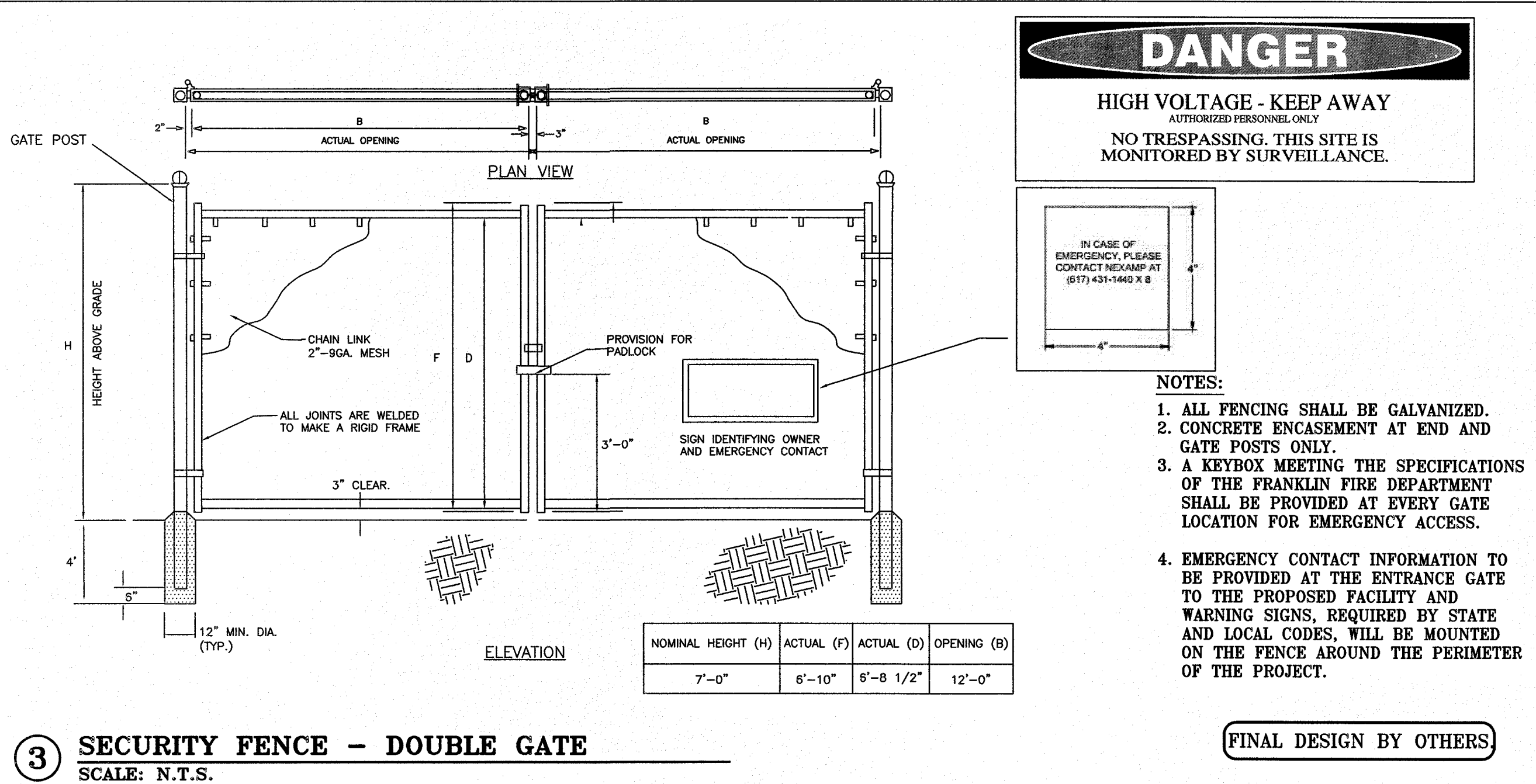
SCALE: N.T.S.



FINAL DESIGN BY OTHERS

### 3 SECURITY FENCE - DOUBLE GATE

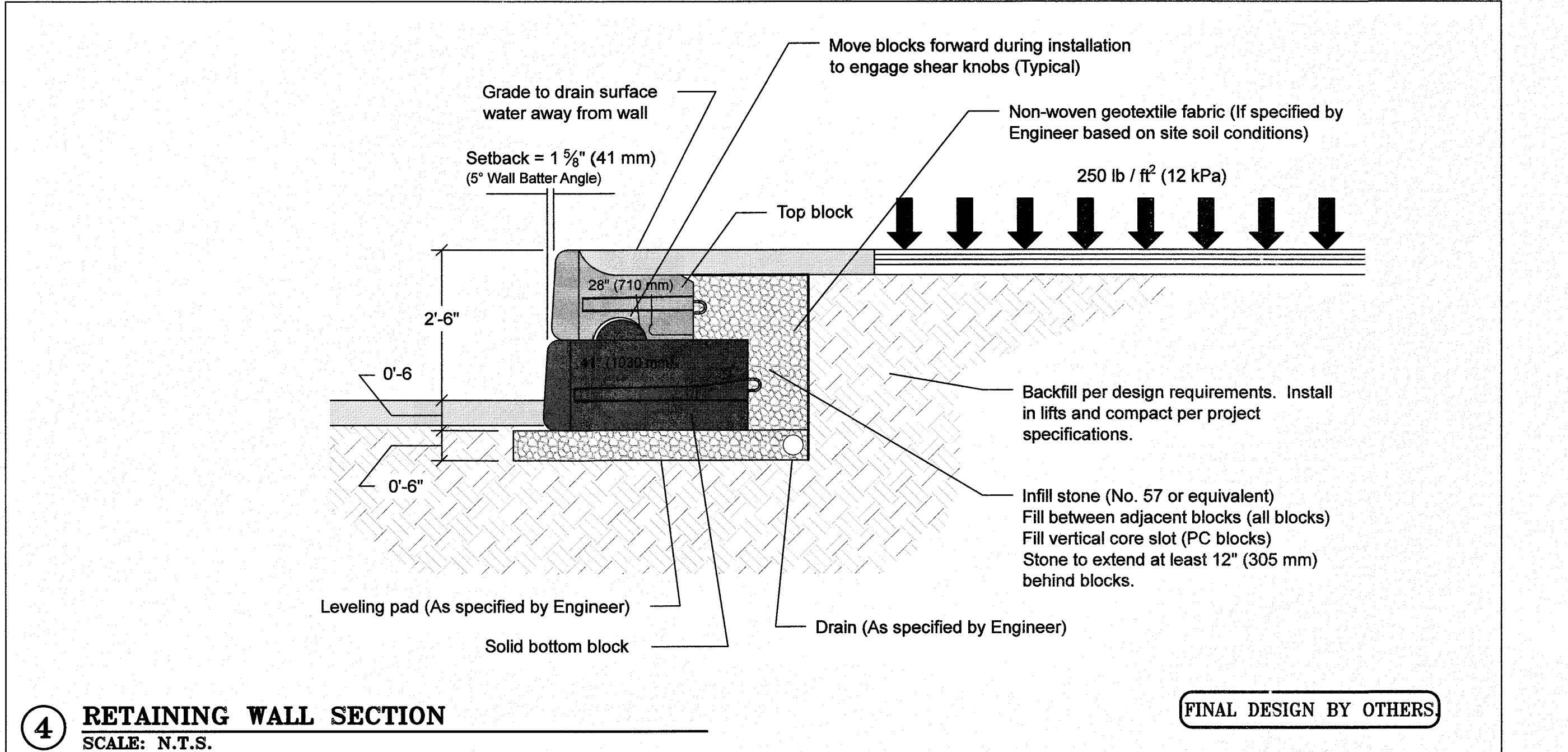
SCALE: N.T.S.



FINAL DESIGN BY OTHERS

### 4 RETAINING WALL SECTION

SCALE: N.T.S.



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PROJECT:

LARGE-CAPACITY GROUND  
MOUNTED SOLAR ENERGY SYSTEM  
SPRING STREET  
FRANKLIN, MA

APPLICANT:

SPRING ST. RENEWABLES, LLC  
101 SUMMER STREET  
BOSTON, MA 02110

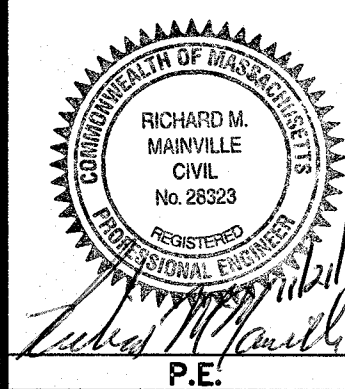
#### REVISIONS

NO.	DATE	DESCRIPTION

#### GRAPHIC SCALE

#### SHEET TITLE

### CONSTRUCTION DETAILS

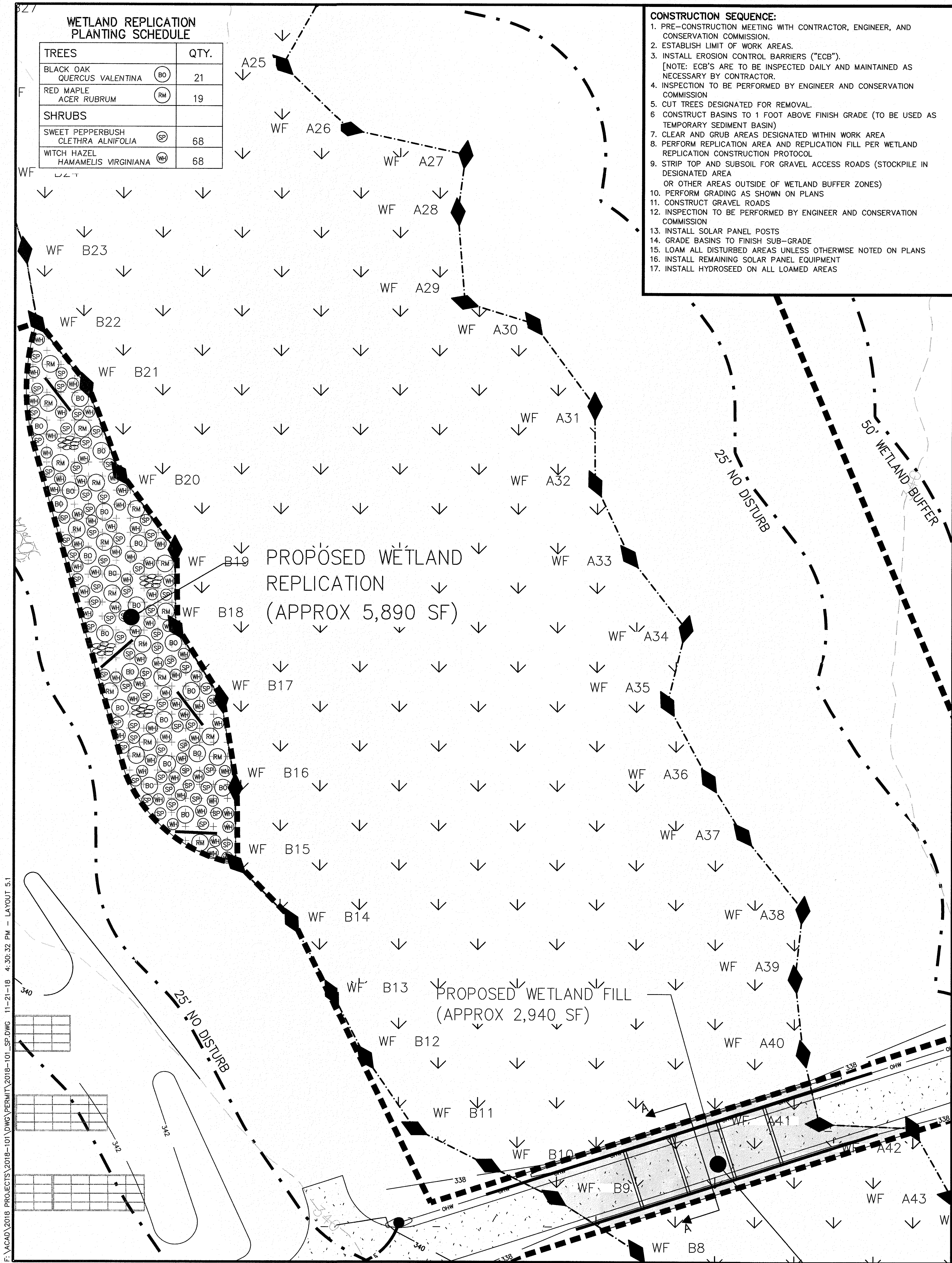


DES BY: KNP DATE: NOVEMBER 21, 2018  
CHK BY: RMM PROJECT NO. 2018-101

C4.2  
PLAN NO. L-5691

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- WETLAND REPLICATION CONSTRUCTION PROTOCOL:
- THE FOLLOWING PROTOCOL CONFORMS TO THE GENERAL PERFORMANCE STANDARDS IN THE MA WETLANDS PROTECTION ACT REGULATIONS AT 310 CMR 10.55(4)(B) AS SUMMARIZED IN TABLE 2. PLEASE NOTE THAT THE REPLICATION AREA WILL BE BROUGHT TO SUB-GRADE PRIOR TO INITIATING WORK AT THE WETLAND CROSSING.
  - THE WETLAND BOUNDARIES (I.E., DOWN GRADIENT EDGES OF THE WETLAND REPLICATION AREA) WILL BE MARKED IN THE FIELD.
  - PRIOR TO THE START OF EARTH-MOVING ACTIVITIES IN THE REPLICATION AREA, AN EROSION CONTROL BARRIER OF PROPERLY INSTALLED SILTATION FENCE (I.E., THE BOTTOM FEW INCHES OF THE SILTATION FENCE INSTALLED IN A NARROW, TRENCH AND THE TRENCH FILLED WITH SOIL, AROUND THE SILTATION FENCE) WILL BE INSTALLED ALONG THE WETLAND BOUNDARIES BETWEEN THE WETLAND AND THE WETLAND REPLICATION AREA. THE WETLAND REPLICATION AREA WILL THEN BE CLEARED AND GRUBBED, WITH THE EXCEPTION OF THE TREES THAT HAVE BEEN MARKED TO BE SAVED.
  - THE PROPOSED FINAL GRADE FOR THE REPLICATION AREA SHOULD APPROXIMATE THE ELEVATION OF THE ADJACENT WETLAND AREAS, AS NOTED ON THE SITE PLANS. THE REPLICATION AREA WILL BE EXCAVATED TO A DEPTH OF 12 INCHES BELOW THE PROPOSED FINAL GRADE. THE EXCAVATION AND PLANTING WORK WILL BE CLOSELY SUPERVISED BY A QUALIFIED WETLAND SCIENTIST. MINOR MODIFICATIONS TO THE PROPOSED GRADING MAY BE MADE IN THE FIELD BY THE WETLAND SCIENTIST IN RESPONSE TO OBSERVED SUBSURFACE HYDROLOGIC CONDITIONS. ALL EXCAVATED MATERIAL WILL BE DISPOSED OF AWAY FROM ALL WETLAND RESOURCE AREAS. EIGHT TO TEN BOULDERS (1 TO 2 FOOT DIAMETER) WILL BE PLACED IN TWO PILES, AT SUBGRADE, WITHIN THE REPLICATION AREA TO PROVIDE WILDLIFE SHELTERS. TWO TREE TRUNKS, APPROXIMATELY 20 FEET IN LENGTH, WILL BE "PLANTED" UPRIGHT, WITHIN THE REPLICATION AREA, TO PROVIDE NESTING CAVITIES AND FORAGE OPPORTUNITIES.
  - EXISTING TOPSOILS WITHIN THE IMPACT AREA WILL BE EXCAVATED, STOCKPILED AND KEPT MOIST BY WATERING AND/OR COVERING.
  - RELOCATED WETLAND TOPSOILS WILL BE SUPPLEMENTED WITH A 1:1 MIXTURE OF HIGH QUALITY, LOAMY TOPSOIL AND LEAF MOLD COMPOST, AS NECESSARY, TO APPROXIMATE 12 INCHES IN THICKNESS THROUGHOUT THE REPLICATION AREA. THE SUBSTRATE WILL BE ROUGHLY GRADED TO PROVIDE AN APPROPRIATE MICROTOPOGRAPHY. A MINIMUM OF 4 INCHES OF LOAMY TOPSOIL WILL BE APPLIED TO THE SIDE-SLOPES OF THE WETLAND REPLICATION AREA. THE SIDE SLOPES SHOULD BE STABILIZED AS NECESSARY TO PREVENT EROSION.
  - WILDLIFE ENHANCEMENT MEASURES INCLUDING FOUR TREE TRUNKS AND FOUR PILE WILL BE INSTALLED WITHIN EACH REPLICATION AREA. THE TREE TRUNKS WILL CONSIST OF 12 TO 20 FOOT LOGS PLACED RANDOMLY ON THE FINISHED SURFACE. THE TREE TRUNKS WILL PROVIDE FOOD, FORAGE AND CAVITY NESTING OPPORTUNITIES. THE ROCK PILES WILL CONSIST OF FOUR OR FIVE BOULDER EACH (APPROXIMATELY 24 INCHES IN DIAMETER) PILED AT SUB-GRADES SO AS TO CREATE CREVICES AND CAVITIES FOR SHELTER AND NESTING.
  - AN EROSION CONTROL BARRIER COMPRISING ONLY TOED-IN SILTATION FENCE WILL BE PROPERLY INSTALLED BETWEEN THE COMPLETED REPLICATION AREA AND THE ADJACENT UPLAND SIDESLOPES.
  - PLANTING WILL BE DONE ONLY DURING THE BEGINNING (APRIL 15 THROUGH JUNE) OR END (SEPTEMBER 1 TO NOVEMBER 15) OF THE GROWING SEASON. PLANTING IN THE MID-GROWING SEASON IS ONLY ACCEPTABLE IF IRRIGATION IS PROVIDED. THE PLANT SPECIES IDENTIFIED IN THE TABLE BELOW WILL BE PLANTED IN THE REPLICATION AREA EITHER BY TRANSPLANT OR FROM NURSERY STOCK. THE SAPLINGS WILL BE DISTRIBUTED THROUGHOUT THE AREA. THE SHRUBS WILL BE PLANTED RANDOMLY THROUGHOUT THE AREA WITH THE AVERAGE SPACING BETWEEN SHRUBS APPROXIMATELY 5 FEET ON-CENTER. THE WOODY VEGETATION SHOULD NOT BE PLANTED IN ROWS.
  - THE REPLICATION AREA WILL BE SEEDING WITH "NEW ENGLAND WETMIX" AS PER NEW ENGLAND WETLAND PLANTS, INC SPECIFICATIONS OR APPROVED EQUAL TO PROVIDE FOR TEMPORARY EROSION CONTROL AND MOISTURE RETENTION.
  - THE REPLICATION AREAS WILL BE INSPECTED, BY A QUALIFIED WETLAND SCIENTIST, AT THE END OF EACH GROWING SEASON FOR A MINIMUM OF TWO YEARS OR UNTIL SUCH TIME AS THE REQUIRED 75% OF VEGETATIVE COVER WITH WETLAND SPECIES HAS BEEN ESTABLISHED. WRITTEN RESULTS OF THESE INSPECTIONS WILL BE SUBMITTED TO THE CONSERVATION COMMISSION.
  - AFTER THE WETLAND REPLICATION AREA HAS BECOME VEGETATIVELY STABILIZED, AND FOLLOWING APPROVAL OF THE ISSUING AUTHORITY, THE SILTATION FENCE AND ALL WOODEN STAKES WILL BE REMOVED AND DISPOSED OF PROPERLY.

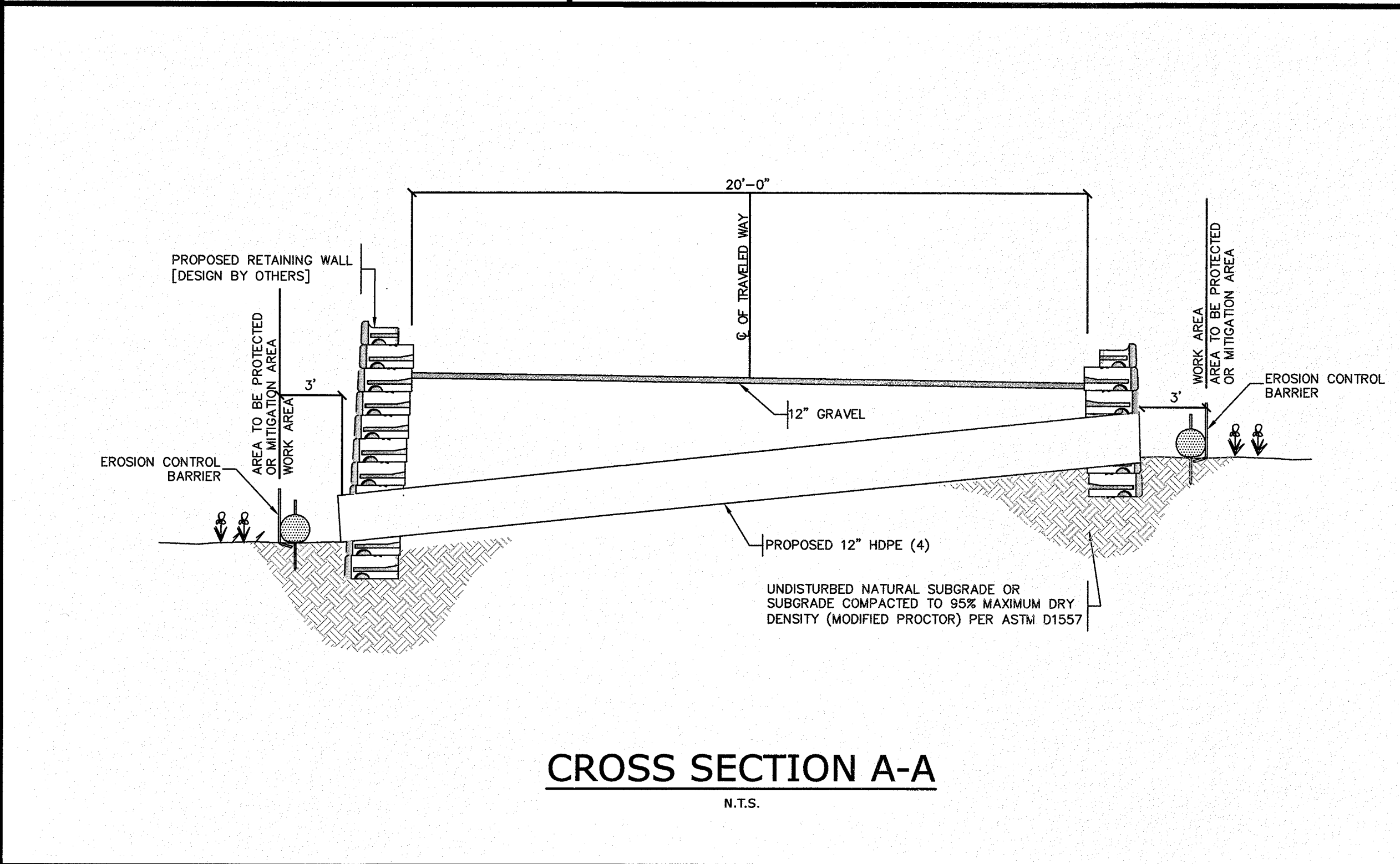


TABLE 1.

PUBLIC INTERESTS:	VALUE OF AREAS TO BE ALTERED:	VALUE OF REPLICATION AREAS:
PUBLIC AND PRIVATE WATER SUPPLY, GROUNDWATER SUPPLY	YES. RECHARGES GROUNDWATER THROUGH INFILTRATION. SEASONALLY RECHARGES SURFACE WATER THROUGH OVERLAND FLOW. OVERLAND FLOW WILL BE MAINTAINED THROUGH CULVERTS.	YES. WILL ALSO RECHARGE GROUNDWATER THROUGH INFILTRATION IN FRIABLE SUBSOIL AND SUBSTRATE.
FLOOD CONTROL AND STORM DAMAGE PREVENTION	YES. SOME STORAGE OF RUNOFF IN SEASONALLY SATURATED SOILS	YES. SEASONALLY SATURATED SOILS WILL STORE EQUAL OR GREATER VOLUMES OF RUNOFF.
PREVENTION OF POLLUTION	YES. CONTAMINANTS AND EXCESS NUTRIENTS RETAINED IN, AND DEGRADED BY, MINERAL AND ORGANIC COMPONENTS OF HYDRIC SOILS.	YES. CONTAMINANTS AND EXCESS NUTRIENTS RETAINED IN, AND DEGRADED BY, MINERAL AND ORGANIC COMPONENTS OF HYDRIC SOILS.
FISHERIES	N/A. NO PERENNIAL WATERWAY OR WATERBODY	N/A. NO PERENNIAL WATERWAY OR WATERBODY
WILDLIFE HABITAT	YES. EXISTING VEGETATIVE LAYERS, SOIL STRUCTURE, DEADWOOD AND SURFACE STONES PROVIDE FORAGING AND SHELTER OPPORTUNITIES.	YES. REPLICATED SOIL STRUCTURE, PLANTING, BOULDER PLACEMENT AND TREE SNAGS WILL PROVIDE OPPORTUNITIES FOR WILDLIFE SHELTER AND FORAGE.

EDGE OF EXISTING WETLAND

PROPOSED REPLICATION AREA

UPLANDS

SILTATION FENCE (TO BE MAINTAINED UNTIL REPLICATION IS ESTABLISHED)

PROPOSED FINISHED GRADE

EXISTING GRADE

EXCAVATE TO 1' BELOW ELEVATION OF ADJACENT WETLAND.

2" APPROX.

2" APPROX.

8:1 SLOPE (LOAM & SEED)

REPLACE WITH 12" OF TOPSOIL STOCKPILED FROM LOST WETLAND AREAS SUPPLEMENTED 1:1 WITH MIXTURE OF HIGH QUALITY, LOAMY TOPSOIL AND LEAF MOLD COMPOST.

SEE PLANTING SCHEDULE FOR PROPOSED WETLAND SPECIES. SEE CONSTRUCTION PROTOCOL FOR HABITAT REPLICATION REQUIREMENTS.

TYPICAL WETLAND REPLICATION CROSS SECTION

N.T.S.

12" MIN.

12" PIPE

12" PIPE

12" PIPE

12" PIPE

COMPACTED PROCESSED GRAVEL (12" MIN.)

FILTER FABRIC

ORIGINAL ORGANIC FREE MATERIAL MEETING TYPE B M105.0 OR COMPACTED GRAVEL APPROVED BY THE ENGINEER.

BACKFILL W/ STRUCTURAL FILL

12" HDPE (4-20' LOADING) OR CLASS V RCP PIPE

4"-6" BEDDING

ACCESS ROAD CROSSING PROFILE

SCALE: N.T.S.

NOTE: PIPES TO BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.

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PROJECT:

LARGE-CAPACITY GROUND MOUNTED SOLAR ENERGY SYSTEM

APPLICANT:

SPRING ST. RENEWABLES, LLC  
101 SUMMER STREET  
BOSTON, MA 02110

REVISIONS

NO.	DATE	DESCRIPTION

GRAPHIC SCALE

20 0 10 20 40

( IN FEET )  
1 inch = 20 feet

SHEET TITLE

WETLAND CROSSING & REPLICATION PLAN

RICHARD M. MAINVILLE  
CIVIL  
No. 28523

DES BY: KNP DATE: NOVEMBER 21, 2018  
CHK BY: RMM PROJECT NO. 2018-101

C5.1

PLAN NO. L-5691



LANDSCAPE SCHEDULE

ERNST SOLAR FARM SEED MIX

NEW ENGLAND EROSION CONTROL/RESTORATION MIX

POLLINATOR SEED MIX

AREA TO BE CUT, STUMPS TO REMAIN

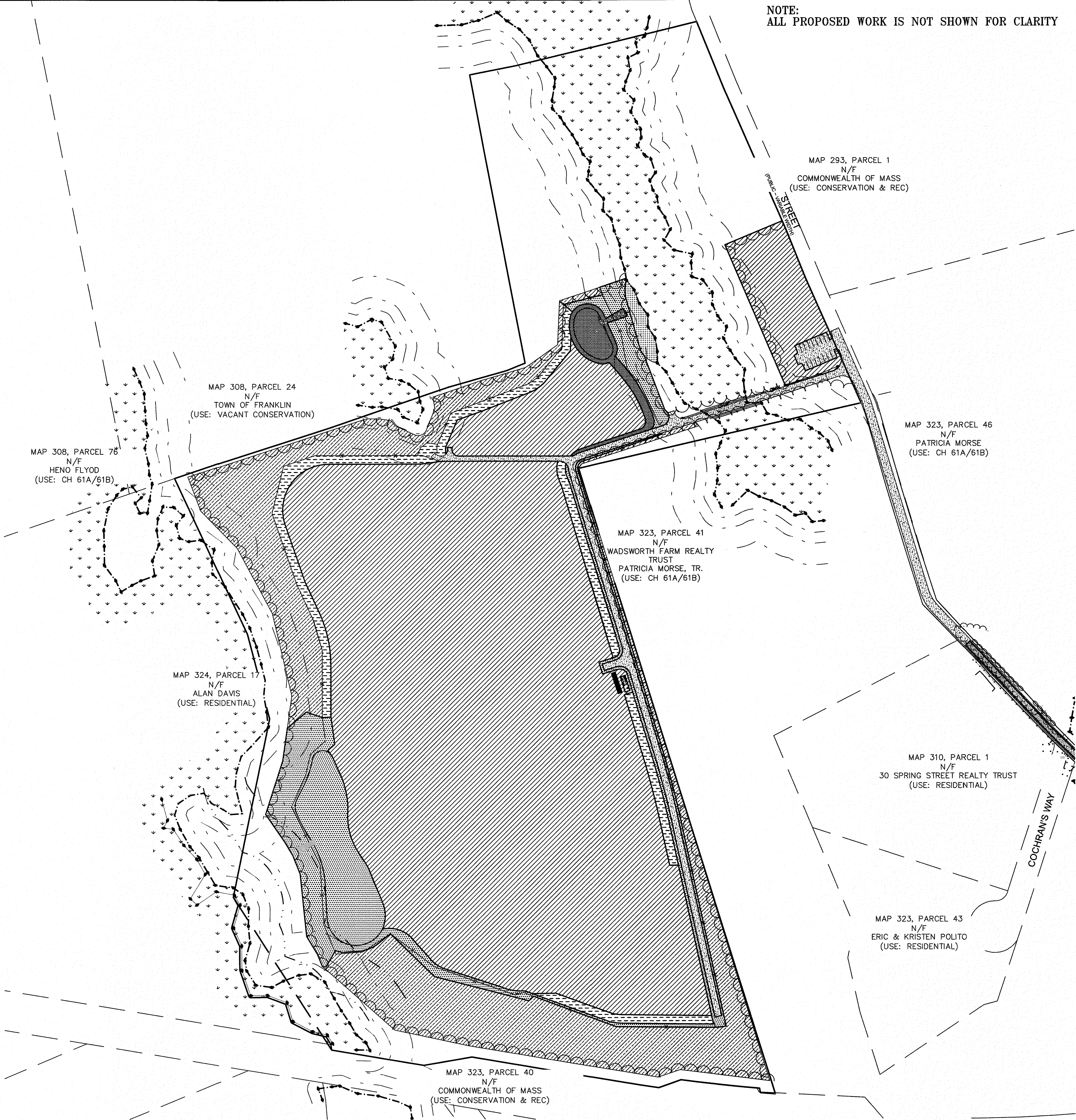
AREA TO BE GRAVELED

SEED MIXES

ERNST SOLAR FARM SEED MIX		
Festuca rubra	(Creeping Red Fescue)	50.0%
Festuca brevifolia, Chariot	(Hard Fescue, Chariot)	15.0%
Festuca brevifolia, Harpoon	(Hard Fescue, Harpoon)	15.0%
Festuca rubra ssp. commutata	(Chewings Fescue)	10.0%
Poa pratensis, Moonstruck	(Kentucky Bluegrass, Moonstruck)	5.0%
Poa pratensis, Shamrock	(Kentucky Bluegrass, Shamrock)	5.0%
ERNST NORTHEASTERN POLLINATOR MIX		
Schizachyrium scoparium, Albany Pine	Bush-NY Ecotype (Little Bluestem, Albany Pine Bush - NY Ecotype)	42.0%
Chamaecrista fasciculata, PA Ecotype	(Partridge Pea, PA Ecotype)	10.0%
Coreopsis lanceolata	(Lanceleaf Coreopsis)	10.0%
Echinacea purpurea	(Purple Coneflower)	0.80%
Agastache foeniculum	(Anise (Lavender) Hyssop)	0.30%
Helopsis helianthoides, PA Ecotype	(Oxeye Sunflower, PA Ecotype)	6.0%
Zizia aurea	(Golden Alexanders)	2.30%
Asclepias syriaca, PA Ecotype	(Common Milkweed, PA Ecotype)	2.0%
Asclepias tuberosa, PA Ecotype	(Butterfly Milkweed, PA Ecotype)	2.0%
Aster lateriflorus	(Calico Aster)	1.10%
Eupatorium perfoliatum, PA Ecotype	(Boneset, PA Ecotype)	1.0%
Pentstemon hirsutus	(Hairy Beardtongue)	1.0%
Pycnanthemum tenuifolium	(Narrowleaf Mountainmint)	1.0%
Vernonia noveboracensis, PA Ecotype	(New York Ironweed, PA Ecotype)	1.0%
Solidago bicolor, PA Ecotype	(White (Silver Rod) Goldenrod, PA Ecotype)	0.70%
Solidago nemoralis, PA Ecotype	(Gray Goldenrod, PA Ecotype)	0.70%
Monarda fistulosa, Fort Indiantown Gap	PA Ecotype (Wild Bergamot, Fort Indiantown Gap-PA Ecotype)	0.60%
Eupatorium maculatum, PA Ecotype	(Spotted Joe Pye Weed, PA Ecotype)	0.50%
Solidago juncea, PA Ecotype	(Early Goldenrod, PA Ecotype)	0.30%

NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES		
Elymus riparius	(Riverbank Wild Rye)	
Schizachyrium scoparium	(Little Bluestem)	
Festuca rubra	(Red Fescue)	
Andropogon gerardii	(Big Bluestem)	
Panicum virgatum	(Switch Grass)	
Vernonia noveboracensis	(New York Ironweed)	
Agrostis perennans	(Upland Bentgrass)	
Bidens frondosa	(Begger Ticks)	
Eupatorium maculatum	(Eutrochium maculatum) (Spotted Joe Pye Weed)	
Eupatorium perfoliatum	(Boneset)	
Aster novae-angliae	(Symphyotrichum novae-angliae) ( New England Aster)	
Scirpus corymbosus	(Wool Grass)	
Juncus effusus	(Soft Rush)	

NOTE:  
ALL PROPOSED WORK IS NOT SHOWN FOR CLARITY



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AT  
AND NO APPEAL WAS RECEIVED DURING THE 20  
DAYS NEXT AFTER SUCH RECEIPT OF SAID  
NOTICE.

FRANKLIN TOWN CLERK

DATE

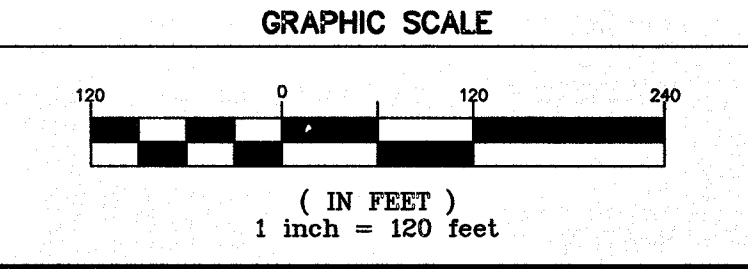
PROJECT:

LARGE-CAPACITY GROUND  
MOUNTED SOLAR ENERGY SYSTEM  
SPRING STREET  
FRANKLIN, MA

APPLICANT:

SPRING ST. RENEWABLES, LLC  
101 SUMMER STREET  
BOSTON, MA 02110

REVISIONS		
NO.	DATE	DESCRIPTION



SHEET TITLE

LANDSCAPE PLAN

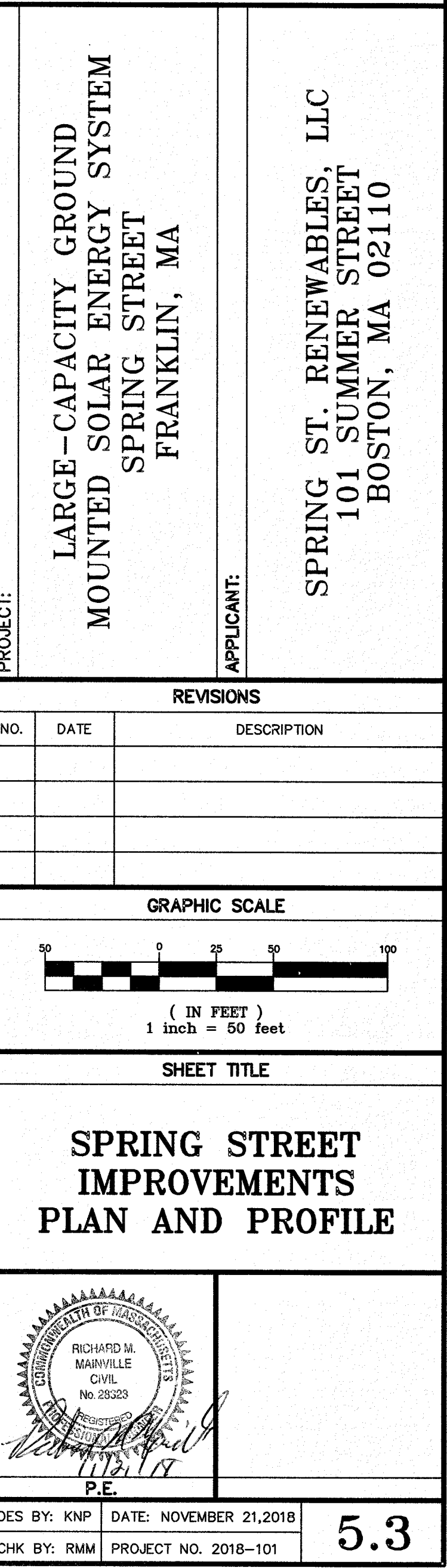
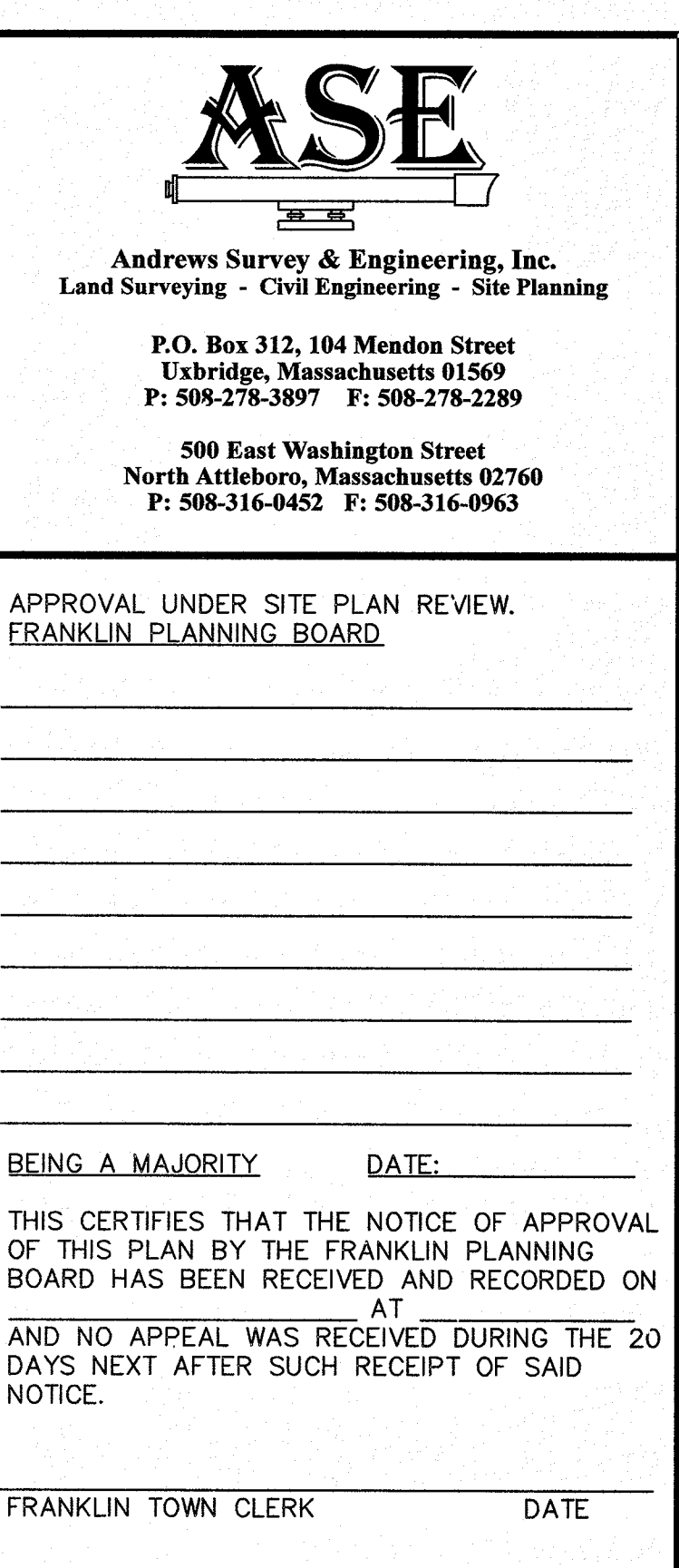
RICHARD M. MAWVILLE  
CIVIL  
No. 28323

11/21/19  
P.E.

DES BY: KNP DATE: NOVEMBER 21,2018  
CHK BY: RMM PROJECT NO. 2018-101

C5.2  
PLAN NO. L-5691







H

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CIRCUIT ID	VOLTAGE	CONDUCTOR QUANTITY, SIZE, AND MATERIAL	INSULATION TYPE	QUANTITY OF CONDUITS	SIZE OF CONDUITS	CONDUIT TYPE	NOTE
A	15kV	(5) #10 AWG AL, (1) #10 AWG AL N	COVERED ACGR	-	-	-	
B	15kV	(5) #10 AWG AL, (1) #10 AWG AL N	COVERED ACGR	-	-	-	
C	15kV	(1) #10 AWG AL	MY-105	1	0-4"	PVC	XPL133% TYPE JNC
D	600V	(3) #10 AWG, (1) #10 AWG N	THWN-2	1	0-1"	PVC	XPL133%
E	600V	(2) #12 AWG	XPLE	1	0-1"	PVC	
F	15kV	(2) #10 AWG AL	COVERED ACGR	1	0-1.5000"		
G	600V	(1) #18 TWISTED SHIELDED PAIR CU		1	0-1"		

\* ALL CONDUCTORS SHALL BE COPPER UNLESS OTHERWISE NOTED.

INVERTER PROTECTIVE FUNCTIONS	VOLTAGE SETTINGS (P.U.)	FREQUENCY SETTINGS (HZ)	TOTAL CLEARING TIME CYC. (SEC.)
27-FAST UNDERVOLTAGE	275 (89%)	-	0.6 (0.16)
27-UNDERVOLTAGE	484 (88%)	-	120 (2)
54-UNDERVOLTAGE	605 (119%)	-	120 (2)
54-OVERVOLTAGE	605 (119%)	-	0.6 (0.16)
54-FAST OVERVOLTAGE	770 (142%)	-	0.6 (0.16)
81-UNDERFREQUENCY	-	58.5	0.6 (0.16)
81-UNDERFREQUENCY	-	58.5	18000 (300)
81-OVERFREQUENCY	-	61.2	18000 (300)
81-OVERFREQUENCY	-	62	0.6 (0.16)

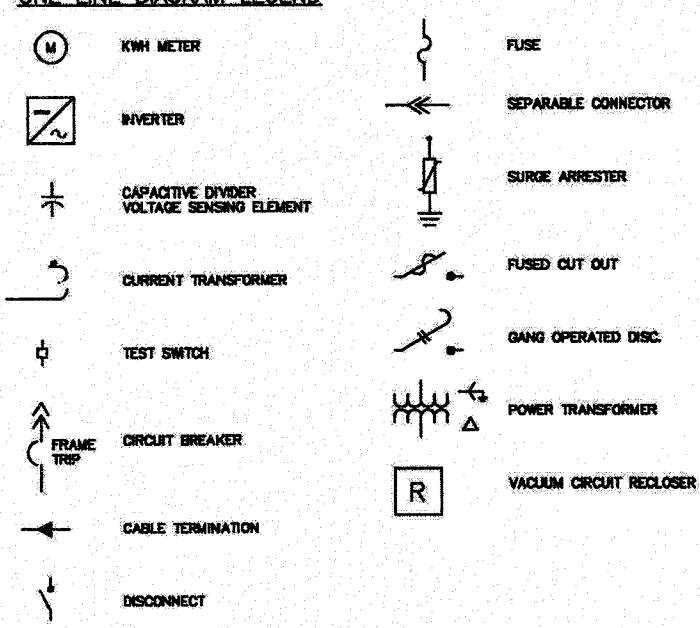
\* SETTINGS ARE BASED ON IEEE-1547 AND IEEE DISCRETE 12  
FIGURE 1 CURVE.

\* VOLTAGE SETTING VALUES ARE L-L

SEL-651R PROTECTIVE FUNCTIONS	TRIP OUTPUT	VOLTAGE SETTINGS SEC (P.U.)	FREQUENCY SETTINGS HZ	TOTAL CLEAR TIME CYCLE	CURRENT SETTINGS P.U.
27P1 - UNDERVOLTAGE	X	(0.60) 9463.7 (50%)	-	9.6 (0.16)	-
27P2 - UNDERVOLTAGE	X	(1.08) 7011.3 (88%)	-	120 (2)	-
58P1 - OVERVOLTAGE	X	(1.32) 7243.1 (110%)	-	120 (2)	-
58P2 - OVERVOLTAGE	X	(1.44) 9560.9 (120%)	-	9.6 (0.16)	-
81UP1 - UNDERFREQUENCY	X	-	58.5	9.6 (0.16)	-
81UP2 - UNDERFREQUENCY	X	-	58.5	18000 (300)	-
81OP1 - OVERFREQUENCY	X	-	61.2	18000 (300)	-
81OP2 - OVERFREQUENCY	X	-	62.0	9.6 (0.16)	-
51 - OVERCURRENT	X	-	UA CURVE T.O. 2	0.52 (0.13A)	-
51C - OVERCURRENT	X	(1.08) 7011.3 (88%)	UA CURVE T.O. 4	0.21 (1.25A)	-
51CG - GROUND OVERCURRENT	X	(1.08) 7011.3 (88%)	UA CURVE T.O. 4	0.1 (0.3A)	-
79 - RECLOSER	X	-	18000 (300)	SEE NOTE 13	-
ALARM	X	-	-	< 120	-

\* ALL TRIP TIMES ARE INCLUSIVE OF  
RECLOSER OPENING (~30CYC)

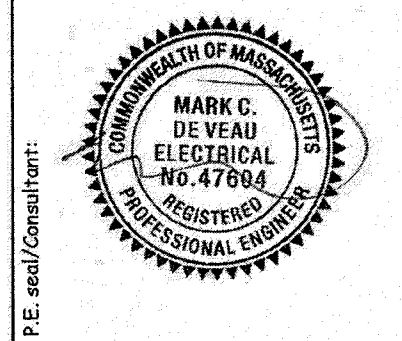
## ONE LINE DIAGRAM LEGEND



# nexamp

 4 Liberty Square, Boston, MA 02109  
 Tel: (617) 431-1440 Fax: (978) 416-2525 Web: nexamp.com

Rev	Issued For	Date Issued
A	Utility Interconnection Application	04/18/2018


 Project:  
 04981 Spring Street  
 Franklin, MA  
 30 Spring Street,  
 Franklin, MA 02038

 Drawing Title:  
**AC Electrical Diagram**  
 Dwg No: **E-101** Size: D Sheet Rev: **A**  
 Drawn by: Aashrva Scale: N.T.S. Approved by:

- GENERAL NOTES:**
- INFORMATION CONTAINED IN THIS DRAWING IS PROPRIETARY AND CONFIDENTIAL BELONGING TO NEXAMP, INC. OF BOSTON, MA. USE OF THIS INFORMATION SHALL BE LIMITED TO THE SPECIFIC PROJECT IT WAS DEVELOPED FOR AND SHALL NOT BE REPRODUCED WITHOUT CONSENT FROM NEXAMP, INC.
  - ALL WORK SHALL BE INSTALLED IN A NEAT AND WORK LIKE MANNER AND IN ACCORDANCE WITH THE LATEST VERSION OF THE MASSACHUSETTS ELECTRICAL CODE (MEC), PROJECT'S STATE ELECTRICAL CODE, AND ALL OTHER LAWS AND STANDARDS.
  - UTILITY INTERCONNECTION IS ASSUMED. ACTUAL EQUIPMENT AND CONFIGURATION SHALL BE VERIFIED BY UTILITY.
  - RS-232 COMMUNICATION CABLES SHALL NOT EXCEED 50 FEET IN TOTAL LENGTH. INSULATION LEVEL SHALL BE 600V.
  - RS-485 COMMUNICATION CABLES SHALL NOT EXCEED 4000 FEET IN TOTAL LENGTH.
  - DATA CABLES SHALL NOT EXCEED 300 FEET IN TOTAL LENGTH.
  - 120VAC POWER CIRCUITS WITHIN DAS/CONTROL CABINET OR ENCLOSURE SHALL BE INSTALLED IN CONDUIT.
  - COMPONENT AND WIRING WITHIN DAS/CONTROL CABINET OR ENCLOSURE SHALL BE FACTORY INSTALLED.
  - RECLOSERS SHALL BE EQUIPPED WITH INTERNAL VOLTAGE AND CURRENT SENSORS.
  - RECLOSER CONTROLLERS SHALL BE SEL-651R OR ENGINEER APPROVED EQUAL.
  - RECLOSER CONTROLLERS SHALL BE EQUIPPED WITH FRONT RS-232 PORT AND CAPABLE OF COMMUNICATING IN DNP PROTOCOL.
  - 79 FUNCTION IS ONLY ENABLED ON VOLTAGE AND FREQUENCY DISTURBANCES. A 5 MINUTE DELAY WILL BE SET FOR RECLOSING UPON GOOD QUALITY VOLTAGE. RECLOSER WILL LOCKOUT ON OVERCURRENT OPERATION.
  - SEL-651R CONTROLLER SHALL BE EQUIPPED WITH AN EIGHT (8) HOUR BATTERY BACKUP.
  - TAMROD RECLOSER SHALL BE EQUIPPED WITH THE SAFE TRIP FUNCTION. THIS FUNCTION WILL BE USED TO TRIP THE RECLOSER ON LOSS OF DC. THE OUTPUT CONTACT (OUT201) IS WIRED TO AN AUXILIARY RELAY MOUNTED UP AT THE RECLOSER. UPON LOSS OF ALL POWER TO THE RELAY THE AUXILIARY RELAY WILL DROP OUT AND THE RECLOSER WILL TRIP WITHIN 2 SEC.
  - DC POWER WILL BE PROVIDED TO THE RECLOSER BY A BUILT-IN BATTERY. THE BATTERY IS CHARGED FROM UTILITY SIDE OF THE RECLOSER THROUGH AN AUXILIARY TRANSFORMER. IN THE CASE OF POWER FAILURE, THE BATTERY POWER WILL BE RESPONSIBLE FOR TRIPPING THE RECLOSER AS STATED IN NOTE 15.
  - THE RECLOSER AND GANG OPERATED DISCONNECT SWITCH SHALL BE OPENED AND LOCKED OUT PRIOR TO ANY WORK INVOLVING EXPOSED ELECTRICAL CIRCUIT PARTS.
  - ALL SINGLE PHASE DISCONNECTS SHALL BE LEFT CLOSED UNTIL THE RECLOSER AND GANG OPERATED DISCONNECT SWITCH HAVE BEEN OPENED AND LOCKED OUT.
  - RECLOSER WILL ONLY BE ALLOWED TO CLOSE WHEN THE VOLTAGE AND FREQUENCY ARE IN COMPLIANCE WITH IEEE1547 AND ANSI C84.1, TABLE 1. VOLTAGE RANGE 90% TO 105.0% OF NOMINAL. VOLTAGE IS BASED ON LINE TO LINE VOLTAGE.
  - TEST SWITCHES ARE FOR REPRESENTATIONAL PURPOSE ONLY. THEY WILL BE HARDCWIRED INTO SEL 651R BY THE MANUFACTURER. FREQUENCY BETWEEN 59.3HZ TO 60.5HZ.
  - TEST SWITCHES ARE FOR REPRESENTATIONAL PURPOSE ONLY. THEY WILL BE HARDCWIRED INTO SEL 651R BY THE MANUFACTURER.
  - HYDRA HIC3500I MODULES ARE USED.
  - THE SYSTEM DC CAPACITY IS 6832.80AH AND THE SYSTEM AC CAPACITY IS 5000WH.