PROJECT INFORMATION

PROJECT DEVELOPER:

SUNEDISON (CORPORATE OFFICE)

12500 BALTIMORE AVENUE

BELTSVILLE, MD 20705

PROJECT EN
LUKE CHILD
LCHILDS@SU

KEY MAP

AERIAL MAP

(443) 909-7200 SUNEDISON (REGIONAL OFFICE) 100 TWINBRIDGE DRIVE, SUITE J PENNSAUKEN, NJ 08110

ELECTRICAL ENGINEER

(856) 330-1482

JEFF THOENS, PE
WHITMAN
7 PLEASANT HILL ROAD
CRANBURY, NJ 08512
(732) 390-5858

PROJECT ENGINEER: LUKE CHILDS LCHILDS@SUNEDISON.COM (301) 875-3095

CIVIL ENGINEER

WHITMAN

JOHN W. COLAGRANDE, PE

SCALE: 1"=±1000

SCALE: 1"=±800

7 PLEASANT HILL ROAD

CRANBURY, NJ 08512

(732) 390-5858

OWNER:

PARCEL ID:

TRI-COUNTY REGIONAL VOCATIONAL 147 POND STREET FRANKLIN, MA 02038

TRI-COUNTY VOCATIONAL SCHOOL

OLD W CENTRAL ST. POLE 74-2

FRANKLIN, MA 02038

259-004-000-000

APPLICANT:

SITE NAME/ADDRESS:

SUNEDISON 100 TWINBRIDGE DRIVE, SUITE J PENNSAUKEN, NJ 08110

PV SYSTEM SPECIFICATIONS

SITE INFORMATION

INVERTER(S):

(2) ADVANCED ENERGY 500kW INVERTER (AE 500 TX)

SOLAR MODULE:

(3,960) MEMC 330W (MEMC-M330BMC)

STRING SIZE:

INVERTER 1 (PV-1)
INVERTER 2 (PV-2)

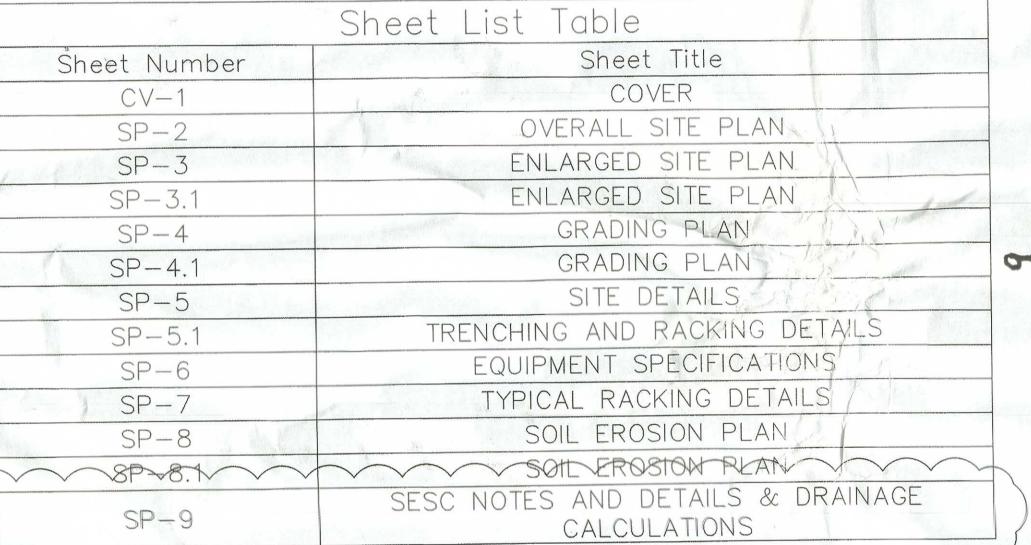
(180) STRINGS, (1,980) MODULES (180) STRINGS, (1,980) MODULES

(11) MODULES PER STRING

RACKING:

pro-tech energy solutions ...





MUNICIPAL APPROVALS

3-24-14 DATE

PRELIMINARY & FINAL SITE PLAN DRAWINGS

FOR GROUND MOUNTED

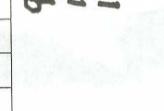
±1.3 MW (DC), 1.0 MW (AC) PHOTOVOLTAIC SYSTEM

SUN EDISON PROJECT # MA-12-0172

TRI-COUNTY REGIONAL

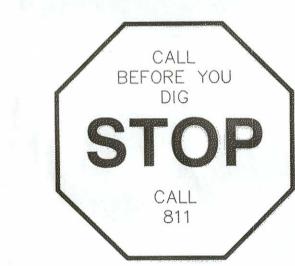
VOCATIONAL SCHOOL

OLD W. CENTRAL ST. POLE 74-2



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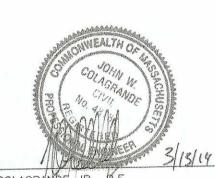




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JOHN W. COLAGRANDE JR., P.E. DATE MASSACHUSETTS PROFESSIONAL ENGINEER LIC. NO. 4878

DRAWING NOTES:

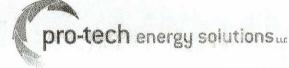
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2	02/18/14	COMMENTS INCORPORATED
3	03/04/14	COMMENTS INCORPORATED
4	3/12/14	FINAL SUBMISSION

PROJECT:

1.3068 MW (DC) TOTAL
1.0 MW (AC) TOTAL
GROUND MOUNTED PHOTOVOLTAIC SYSTE
SUN EDISON # MA-12-0172
TRI-COUNTY REGIONAL
VOCATIONAL SCHOOL
OLD W CENTRAL ST. POLE 74-2
FRANKLIN MA 02038

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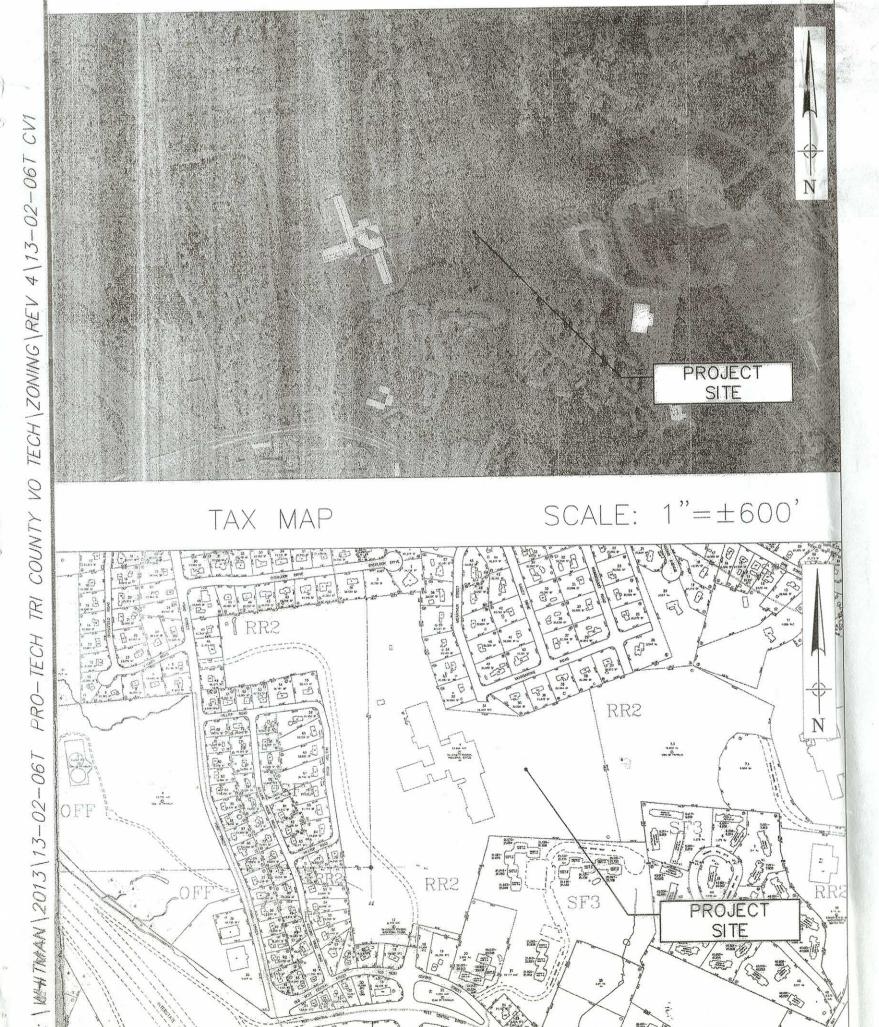
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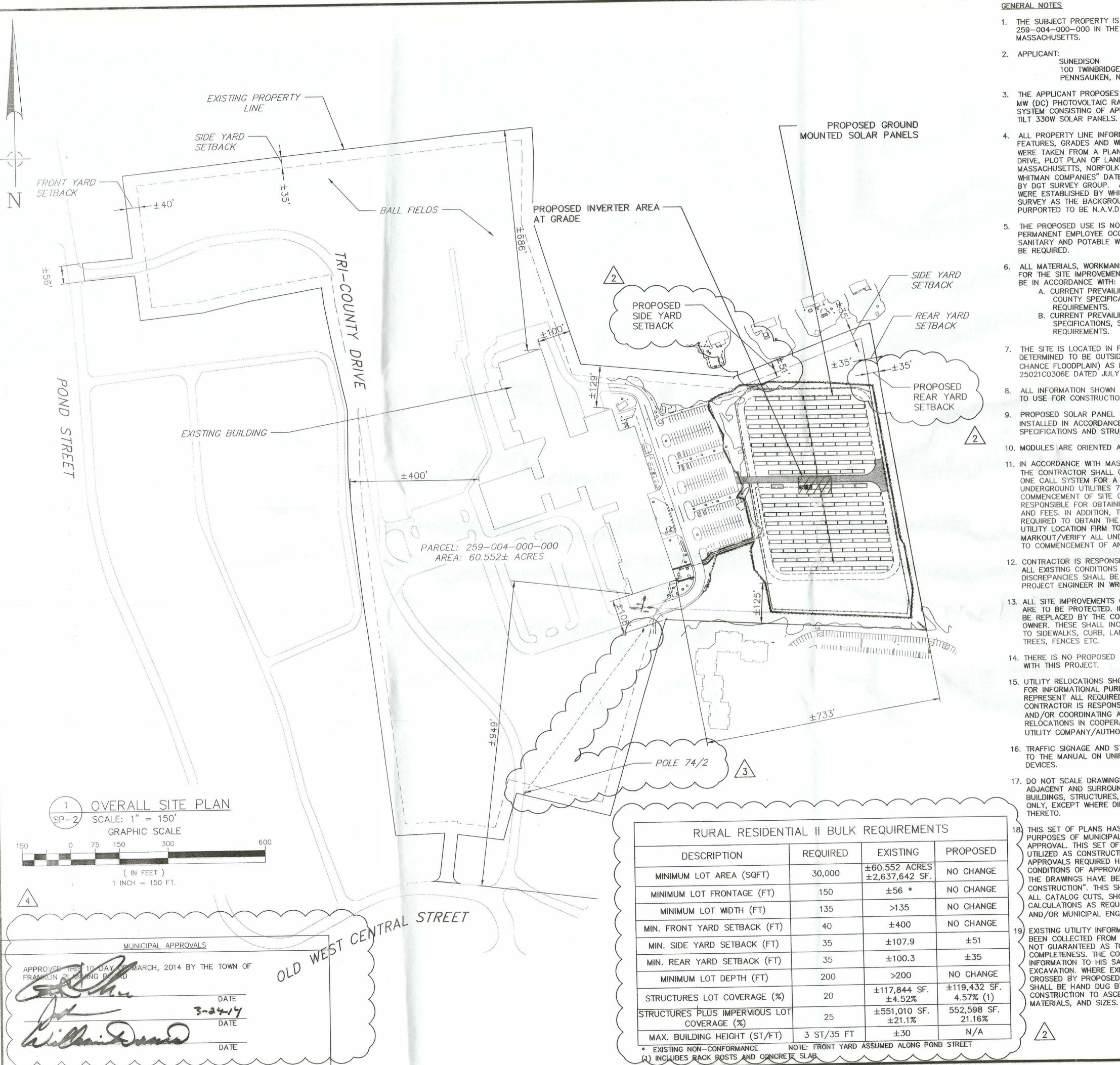
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1 OF 13 EALEC





GENERAL NOTES

- 1. THE SUBJECT PROPERTY IS KNOWN AS PARCEL ID#: 259-004-000-000 IN THE TOWN OF FRANKLIN, MASSACHUSETTS.
- APPLICANT: 100 TWINBRIDGE DRIVE, SUITE J
- 3. THE APPLICANT PROPOSES TO CONSTRUCT A ±1.3 MW (DC) PHOTOVOLTAIC RAISED GROUND MOUNTED SYSTEM CONSISTING OF APPROXIMATELY 3,960 FIXED

PENNSAUKEN, NJ 08110

- 4. ALL PROPERTY LINE INFORMATION, EXISTING FEATURES, GRADES AND WETLAND LINES SHOWN WERE TAKEN FROM A PLAN ENTITLED "TRI COUNTY DRIVE, PLOT PLAN OF LAND IN FRANKLIN, MASSACHUSETTS, NORFOLK COUNTY PREPARED FOR WHITMAN COMPANIES" DATED JUNE 2013, PREPARED BY DGT SURVEY GROUP. ALL PROPOSED FEATURES WERE ESTABLISHED BY WHITMAN UTILIZING THE SURVEY AS THE BACKGROUND. ELEVATION DATUM PURPORTED TO BE N.A.V.D. 1988.
- 5. THE PROPOSED USE IS NOT INTENDED FOR PERMANENT EMPLOYEE OCCUPANCY AND AS SUCH, SANITARY AND POTABLE WATER UTILITIES WILL NOT BE REQUIRED.
- 6. ALL MATERIALS, WORKMANSHIP AND CONSTRUCTION FOR THE SITE IMPROVEMENTS SHOWN HERON SHALL BE IN ACCORDANCE WITH:
  - A. CURRENT PREVAILING MUNICIPAL AND/OR COUNTY SPECIFICATIONS, STANDARDS AND REQUIREMENTS.
  - B. CURRENT PREVAILING UTILITY COMPANY SPECIFICATIONS, STANDARDS AND REQUIREMENTS.
- 7. THE SITE IS LOCATED IN FLOOD ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS PER THE FEMA FIRM PANEL 25021C0306E DATED JULY 17, 2012.
- 8. ALL INFORMATION SHOWN MUST BE VERIFIED PRIOR TO USE FOR CONSTRUCTION ACTIVITIES.
- PROPOSED SOLAR PANEL SUPPORT FRAMES TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND STRUCTURAL REQUIREMENTS,
- 10. MODULES ARE ORIENTED AT 180° TRUE SOUTH.
- 11. IN ACCORDANCE WITH MASSACHUSETTS STATE LAW, THE CONTRACTOR SHALL CONTACT MASSACHUSETT'S ONE CALL SYSTEM FOR A MARKOUT OF ALL UNDERGROUND UTILITIES 72 HOURS PRIOR TO COMMENCEMENT OF SITE CLEARING. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL LOCAL PERMITS AND FEES. IN ADDITION, THE CONTRACTOR WILL BE REQUIRED TO OBTAIN THE SERVICES OF A PRIVATE UTILITY LOCATION FIRM TO LOCATE AND MARKOUT/VERIFY ALL UNDERGROUND UTILITIES PRIOR TO COMMENCEMENT OF ANY EXCAVATION.
- 12. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS INCLUDING UTILITIES. ALL DISCREPANCIES SHALL BE IDENTIFIED TO THE PROJECT ENGINEER IN WRITING.
- 13. ALL SITE IMPROVEMENTS OUTSIDE THE PROJECT LIMIT ARE TO BE PROTECTED. IF DAMAGED, THEY ARE TO BE REPLACED BY THE CONTRACTOR AT NO COST TO OWNER. THESE SHALL INCLUDE BUT NOT BE LIMITED TO SIDEWALKS, CURB, LANDSCAPING, LAWN AREAS TREES, FENCES ETC.
- 14. THERE IS NO PROPOSED LIGHTING PLAN ASSOCIATED WITH THIS PROJECT.
- 15. UTILITY RELOCATIONS SHOWN HEREON, IF ANY, ARE FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT REPRESENT ALL REQUIRED UTILITY RELOCATIONS. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING AND OR COORDINATING ALL REQUIRED UTILITY RELOCATIONS IN COOPERATION WITH THE RESPECTIVE UTILITY COMPANY/AUTHORITIES.
- 16. TRAFFIC SIGNAGE AND STRIPING SHALL CORRESPOND TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- 17. DO NOT SCALE DRAWINGS AS THEY PERTAIN TO ADJACENT AND SURROUNDING PHYSICAL CONDITIONS, BUILDINGS, STRUCTURES, ETC. THEY ARE SCHEMATIC ONLY, EXCEPT WHERE DIMENSIONS ARE SHOWN THERETO.
- THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL APPROVALS REQUIRED HAVE BEEN OBTAINED, ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED AND THE DRAWINGS HAVE BEEN STAMPED "ISSUED FOR CONSTRUCTION". THIS SHALL INCLUDE APPROVAL OF ALL CATALOG CUTS, SHOP DRAWINGS AND/OR DESIGN CALCULATIONS AS REQUIRED BY THE PROJECT OWNER AND/OR MUNICIPAL ENGINEER.
- EXISTING UTILITY INFORMATION SHOWN HEREON HAS BEEN COLLECTED FROM VARIOUS SOURCES AND IS NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS SATISFACTION PRIOR TO EXCAVATION. WHERE EXISTING UTILITIES ARE TO BE CROSSED BY PROPOSED CONSTRUCTIONS, TEST PITS SHALL BE HAND DUG BY THE CONTRACTOR PRIOR TO CONSTRUCTION TO ASCERTAIN EXISTING INVERTS, MATERIALS, AND SIZES. TEST PIT INFORMATION SHALL

BE GIVEN TO THE ENGINEER PRIOR TO CONSTRUCTION TO PERMIT ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS. THE CONTRACTOR SHALL NOTIFY THE UNDER SIGNED PROFESSIONAL IMMEDIATELY IF ANY FIELD CONDITIONS ENCOUNTERED DIFFER MATERIALLY FROM THOSE REPRESENTED HEREON. SUCH CONDITIONS COULD RENDER THE DESIGNS HEREON INAPPROPRIATE OR INEFFECTIVE.

- 20. THE CONTRACTOR IS RESPONSIBLE FOR PROJECT SAFETY, INCLUDING PROVISION OF ALL APPROPRIATE SAFETY DEVICES AND WORKER TRAINING REQUIRED.
- 21. SOLAR PANEL LAYOUT, CONDUIT, AND INVERTER PAD LOCATIONS ARE SUBJECT TO CHANGE BASED ON FINAL SELECTION OF PANEL MANUFACTURER, INSTALLATION CONTRACTOR, AND FINAL INTERCONNECTION AGREEMENT. THE FINAL NUMBER OF PANELS AND ENERGY OUTPUT MAY VARY DEPENDING UPON THE FINAL SELECTION OF PANEL MANUFACTURER AND FIELD CONDITIONS. HOWEVER, THE AREA LIMITS OF THE SOLAR PANEL ARRAY FIELD AS DEFINED BY THE PERIMETER FENCE LINE SHALL REMAIN UNCHANGED.
- 22. REFUSE AND RECYCLABLES ARE NOT ANTICIPATED TO BE GENERATED ON THIS SITE UPON OPERATION OF THE SOLAR GENERATION FACILITY.
- 23. FOUNDATION DESIGN SHALL BE DEPENDENT ON RECOMMENDATIONS BY THE GEOTECHNICAL ENGINEER.
- 24. THESE GENERAL NOTES SHALL APPLY TO ALL SHEETS IN THIS SET.
- 25. NO DETERMINATION HAS BEEN MADE AS TO THE ABSENTS OR PRESENCE OF WETLANDS.
- 26. EXISTING SOILS WILL BE UTILIZED FOR NEW GRADING PLAN.
- 27. FACILITY OWNER TO UTILIZE LIMITED HERBICIDE APPLICATION TO INVASIVE PLANT SPECIES AND, IF FEASIBLE, UTILIZE PHYSICAL REMOVAL.
- 28. FACILITY OWNER TO PROVIDE INSPECTION/MAINTENANCE OF NEWLY DISTURBED AREAS FOR ONE YEAR TO ALLOW FOR PLANT SURVIVAL AND OR REPLACEMENT IF REQUIRED
- 29. ALL ELECTRICAL WORK, INCLUDING ANY NEW POLES, WILL BE DONE ON SCHOOL PROPERTY.



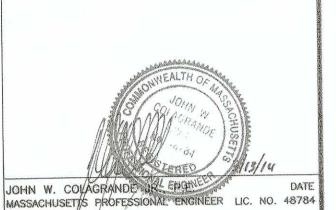
WHITMAN

7 PLEASANT HILL ROAD

CRANBURY, NJ 08512

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FAX: (732) 390-9496



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2	02/18/14	COMMENTS INCORPORATED
3	03/04/14	COMMENTS INCORPORATED
4	3/12/14	FINAL SUBMISSION

PROJECT:

1.3068 MW (DC) TOTAL 1.0 MW (AC) TOTAL GROUND MOUNTED PHOTOVOLTAIC SYSTE SUN EDISON # MA-12-0172 TRI-COUNTY REGIONAL VOCATIONAL SCHOOL OLD W CENTRAL ST. POLE 74-2

FRANKLIN, MA 02038 AS SHOWN TASK.: 3/13/2014 PROJECT No: 130206T REVIEWED BY: C.R. DRAWN BY: C.A. DRAWING TITLE:

OVERALL SITE PLAN

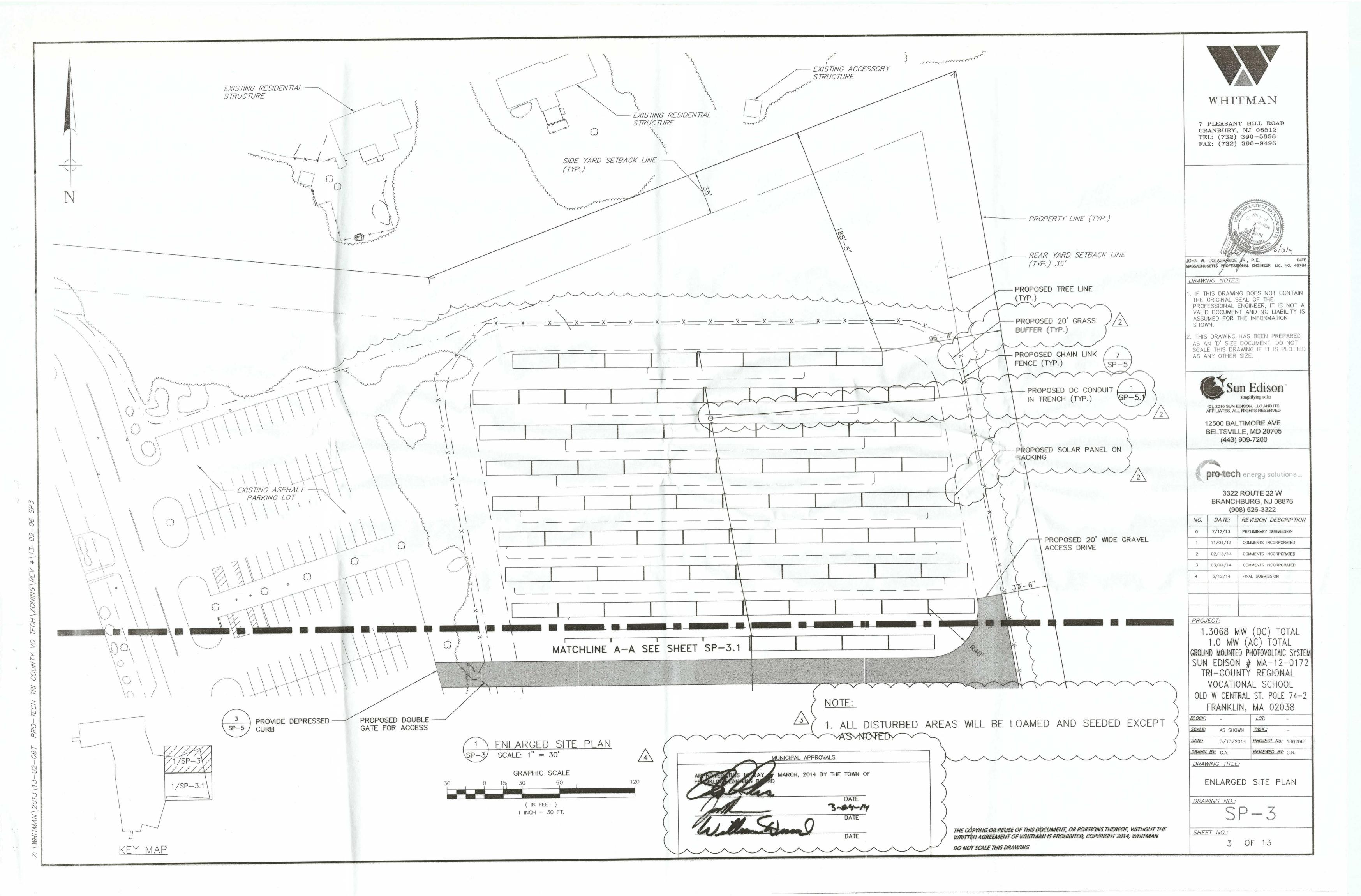
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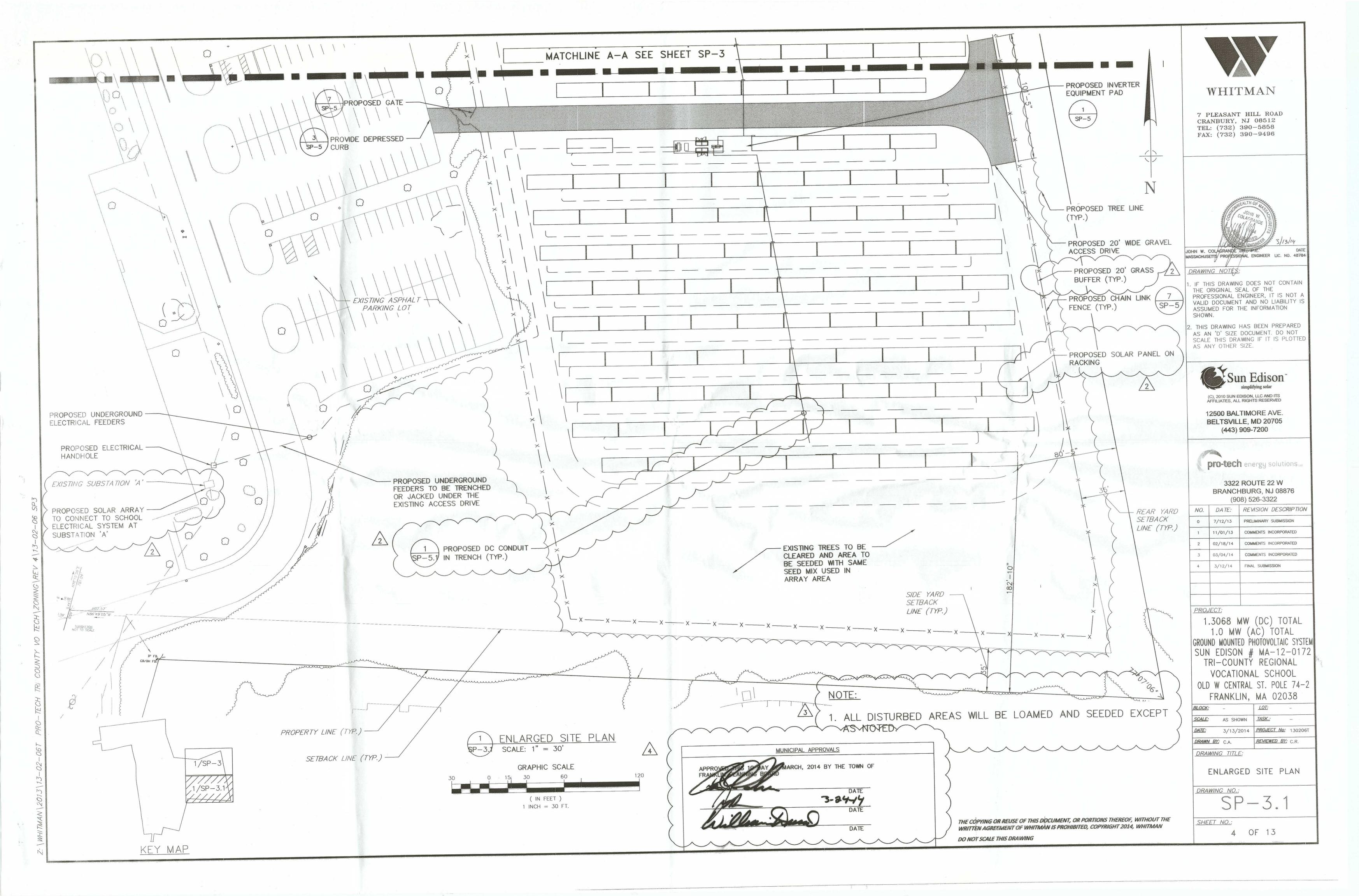
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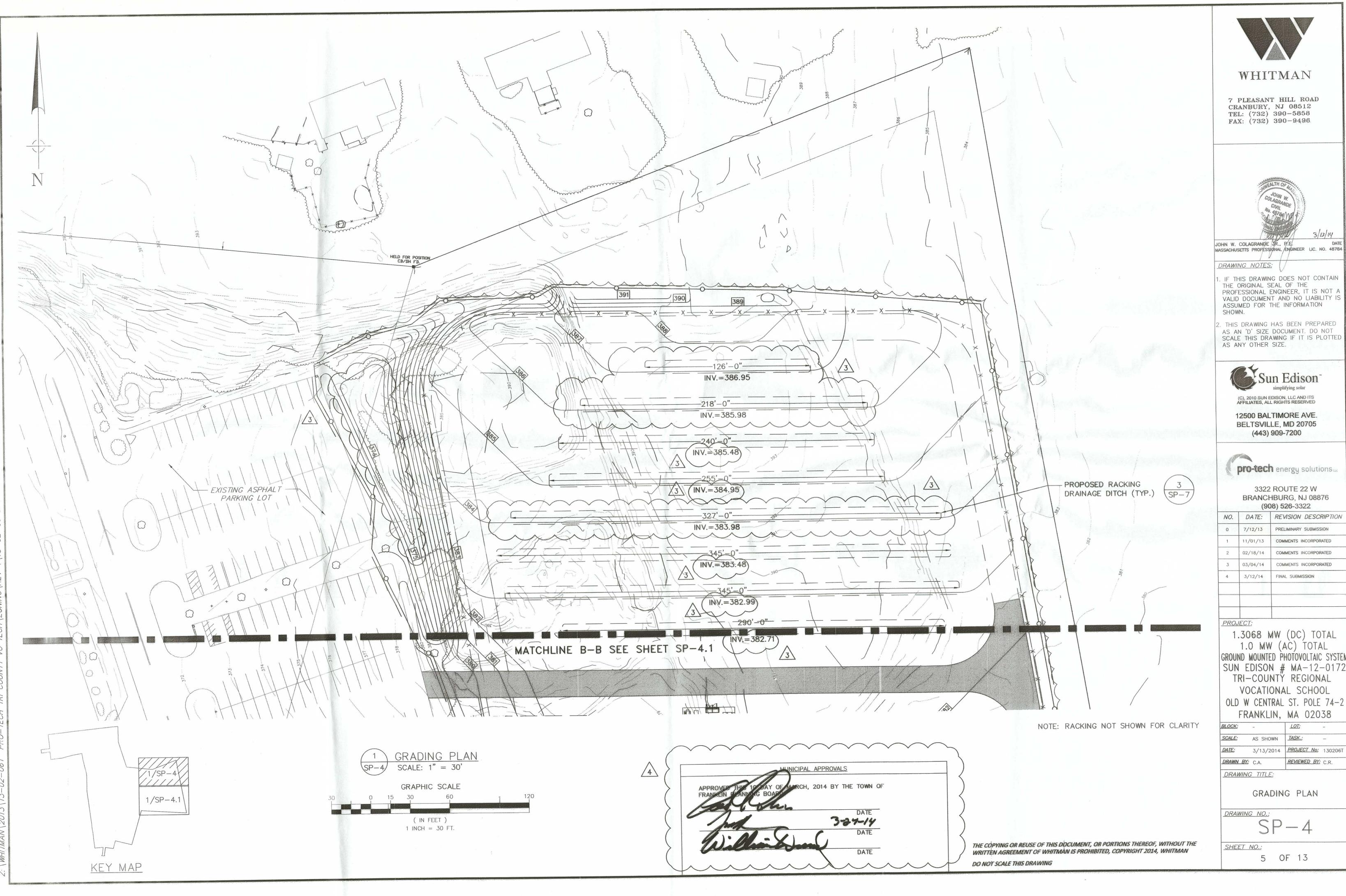
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2 OF 13

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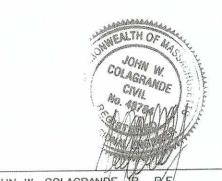








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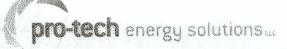
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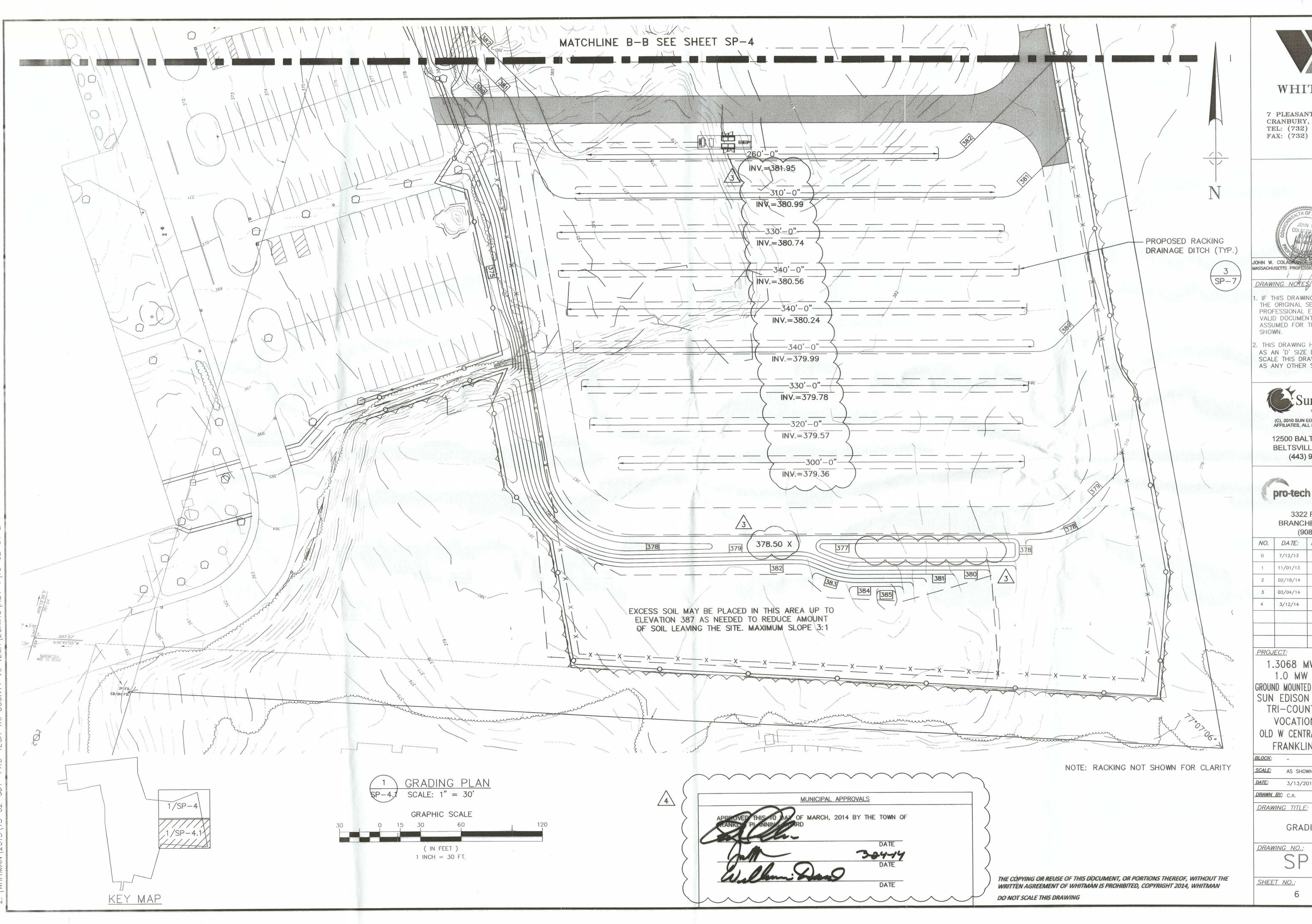
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2	02/18/14	COMMENTS INCORPORATED
3	03/04/14	COMMENTS INCORPORATED
4	3/12/14	FINAL SUBMISSION
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	-	

1.3068 MW (DC) TOTAL
1.0 MW (AC) TOTAL
GROUND MOUNTED PHOTOVOLTAIC SYSTEM
SUN EDISON # MA-12-0172
TRI-COUNTY REGIONAL VOCATIONAL SCHOOL

BLOCK:	-	LOT: -	
SCALE:	AS SHOWN	TASK.:	
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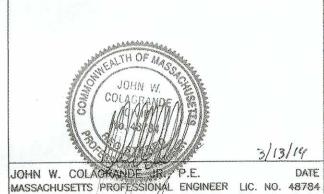
5 OF 13





## WHITMAN

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# pro-tech energy solutions no

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1.3068 MW (DC) TOTAL 1.0 MW (AC) TOTAL GROUND MOUNTED PHOTOVOLTAIC SYSTEM SUN EDISON # MA-12-0172 TRI-COUNTY REGIONAL VOCATIONAL SCHOOL OLD W CENTRAL ST. POLE 74-2 FRANKLIN, MA 02038

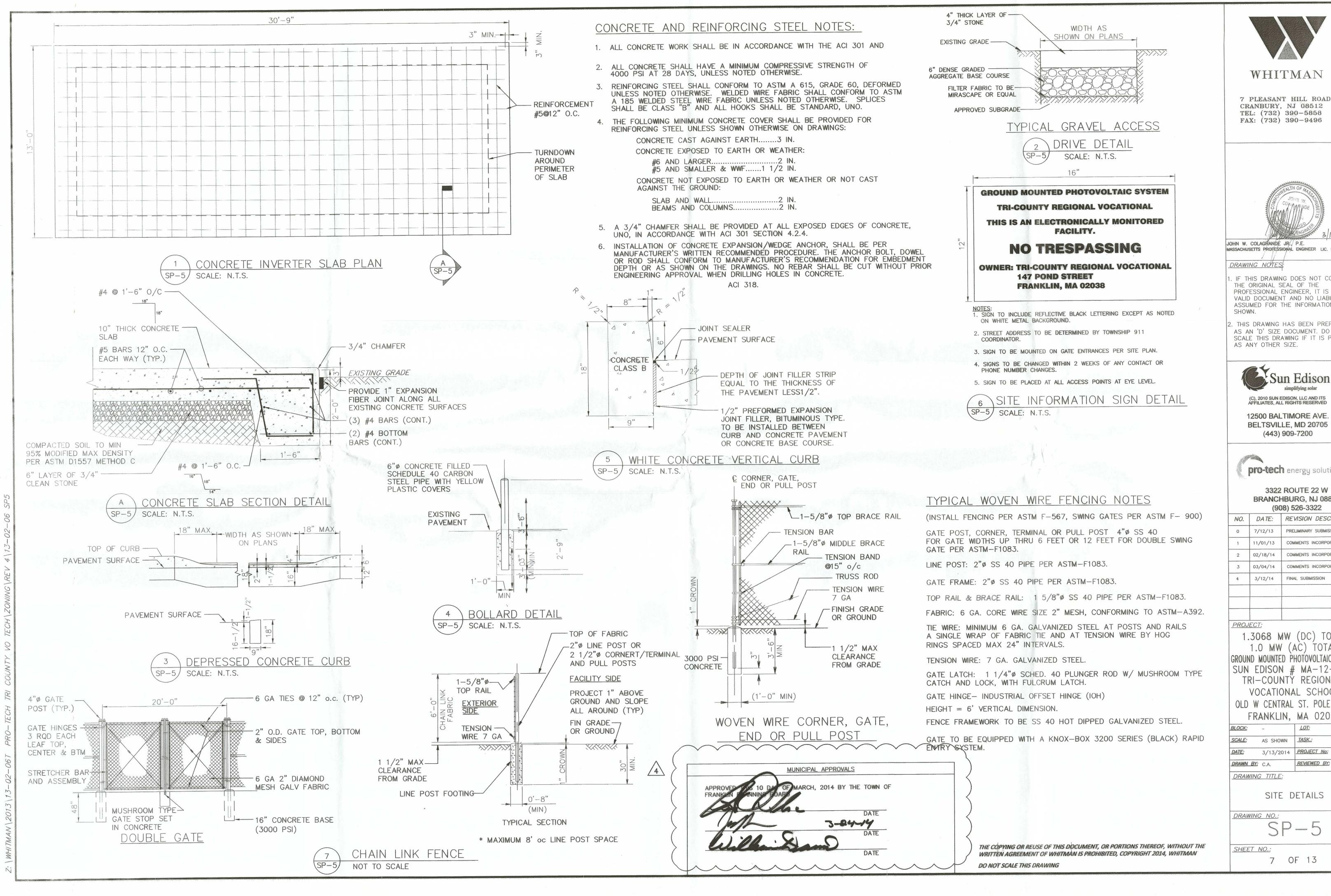
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DATE:	3/13/2014	PROJECT No:	130206T
DRAWN BY:	C.A.	REVIEWED BY:	C.R.

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GRADING PLAN

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MASSACHUSETTS PROFESSIONAL ENGINEER LIC. NO. 4878

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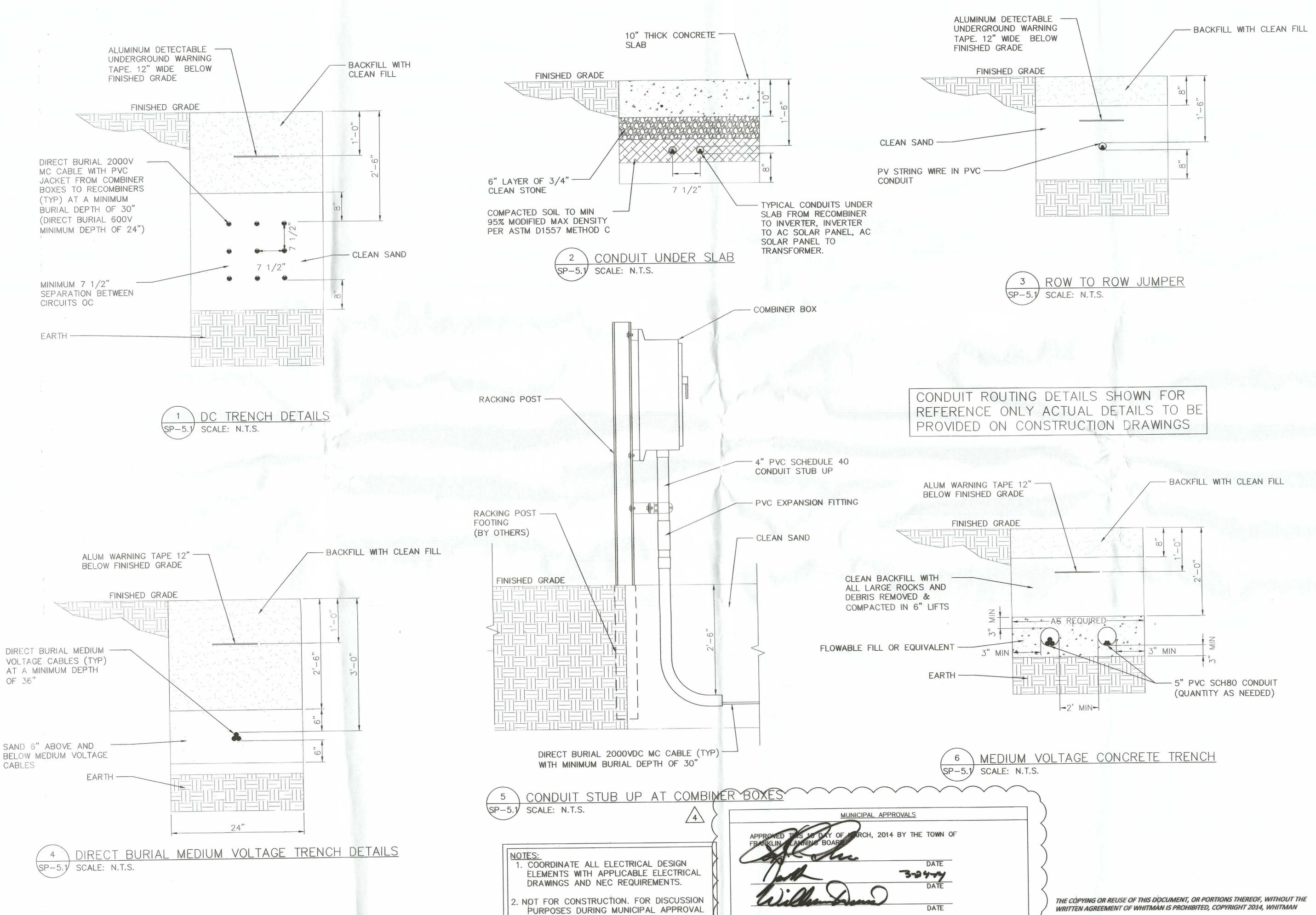
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1.3068 MW (DC) TOTAL 1.0 MW (AC) TOTAL GROUND MOUNTED PHOTOVOLTAIC SYSTEM SUN EDISON # MA-12-0172 TRI-COUNTY REGIONAL VOCATIONAL SCHOOL

OLD W CENTRAL ST. POLE 74-2 FRANKLIN, MA 02038

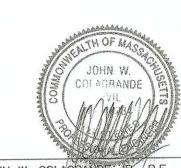
3/13/2014 PROJECT No: 130206T REVIEWED BY: C.R.



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JOHN W. COLAGRANDE JR., P.E. MASSACHUSETTS PROFESSIONAL ENGINEER LIC. NO. 4

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## PROJECT:

1.3068 MW (DC) TOTAL
1.0 MW (AC) TOTAL
GROUND MOUNTED PHOTOVOLTAIC SYSTEM
SUN EDISON # MA-12-0172
TRI-COUNTY REGIONAL
VOCATIONAL SCHOOL
OLD W CENTRAL ST. POLE 74-2

ANKLIN,	MA	02038
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AS SHOWN	TASK.:	-
3/13/2014	PROJEC	CT No: 130206T
C.A.	REVIEW	ED BY: C.R.
		- <i>LOT:</i> AS SHOWN <i>TASK.:</i> 3/13/2014 <i>PROJECT</i>

DRAWING TITLE:

TRENCHING AND RACKING DETAILS

DRAWING NO.:

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<u>SHEET NO.:</u>
8 OF 13

AE 500TX

The complete inverter solution for large commercial and unitry-scale projects

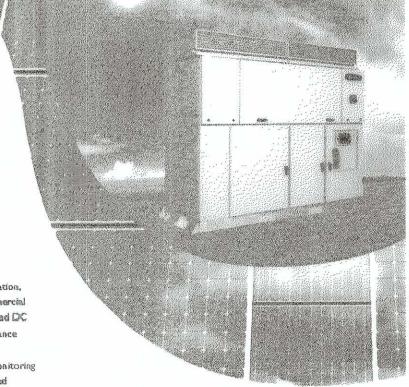
Leading the industry in relability, performance, and innovation, AE Solar Energy introduces the AE SOOTX for large commercial and utility-scale projects. New options include an integrated DC circuit breaker subcombiner that enables low cost compliance with NEC 2011 and improves serviceability. Subcombiner monitoring, a revenue grade meter, and a performance monitoring gatoway can be factory installed for a completely integrated solution. Communication interfaces, remote disable inputs, and optional 24 Vauxiliary power supply are housed in a dedicated low power compartment for safe and easy access. The entire system, including the isolation transformer, is contained within a single NEMA 4 rated cabinet significantly reducing installation time and expense.

Designed for DC loading up to 175%, the AE 500TX maximizes energy harvest and accelerates payback with a 97% weighted CEC efficiency, wide DC operating range, fast convergence MPPT, and the ability to produce full power all the way to 55 °C. Uptime and revenue generation are assured by superior built-in reliability consisting of engineered bushes power connections, redundant cooling system and power supply, card cage circuit board design. and solder-free intelligent power modules.

Advanced power controls provide essential utility support functions including power factor and curtailment with controlled ramp rate making it easy to comply with interconnection requirements.

Total integration, reliability, and utility-support functionality make the AE 500TX the complete inverter solution for large commercial and utility-scale projects.





The AE 500TX is backed with an industry-leading, IO-year. nationwide warranty and a comprehensive optional 20-year warranty; plus the most responsive service and support team in

Superior Reliability

· Rechindant power supply and cooling system with Smart Air Management

· Increased availability with >99% monitored flest availability · Recod for full power operation up to 55 °C · Low parts count reduces potential failure points

 Engineered busbar power connections · Card cage circuit board system minimizes electronic interconnections

Exceptional installability " No external transformer to connect in the field

· Optional DC circuit breaker subcombiner \* DC loading up to 175% · Bottom and side entry with bottom side chases, generous banding area and oversized busbar landings " Exterior mounting flanges for fast and easy anchoring with

Easy to Maintain

and DC modules

· All maintenance and service via front and side access · Fast change circuit board system shortees service time " Optional load-break rated AC service disconnect Dedicated performance monitoring section separate from AC

Advanced Power

Controls

- Power Factor

· Curtallmont

· Controlled ramp rate

• Remote enable/disable

- DC Subcombiner circuit

breakers: 8 - 20 Inputs, 80 A - 400 A trips (max. total of 3500 A)

Subcombiner monitoring

Integrated data monitoring

- 24 V auxiliary power supply

· Presentative maintenance

20-year excended warranty

naintenance costs with integrated

performance monitoring hardware

that enables connectivity to a variety

of software solutions from industry

ies ding monitoring partners. The tight

integration between Advanced Energy

and our monitoring pareners cresses a

while seamlessly delivering meaningful

data. Factory integration and eneding

of our UL listed monkoring solution

reduces field installation costs.

ensures high reliability and significantly

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superior service and support experience

Performance

Mossic or ing Increase upsime and reduce

" Imagrated revenue grade meter

(up to 16 inpuss) Integrated AC Disconnect

· Postive ground

AE 500TX Summary Specifications\*

Powder Coated Steel

Decoma AC Disconnect, DC Breskers

Postuve or negative ground

[[]] 3 phase, 4 wire, grounded Wye

591 Awas @ 460 VAC, 60.3 ms

5 - 100%, 1% facroments

0 to 25%, non-quadensing

R5-485, Exhernet, Plodbug, TCP/IP

∭-40 °C to 60 °C

10 Year

Advanced Energy is a registered U.S. trademerk of Advanced Energy is destries, in

WEB 1920%

50.3 - 60.5 Hz, adjustable to 57.0 Hz

Integrated

1500 A

210-305 V

V 000



KEY FEATURES

energy production

MODULE FAMILY

HIGH EFFICIENCY - 3 BUSBARS SILVANTIS M330 modules are built With proprietary Solorcx® p-type CCz process with uniform resistivity and nyadmum efficiency

QUALITY Manufactured in automated, state-ofthe art racifities conflied to ISOSOO! and iSCrt.400t for highest industry standards.

\*\*\*\*

RELIABLE AND ROBUST DESIGN 1000 V UL by CSA high-quality materials. ARC glass, and high-load capability are part of each module

1000 V UL

QUALITY & SAFETY Solaicx CCz and other industry leading p-type Mono-crystalline IEC61215 certified by TÜV SÜD to ensure long-term operation in a variety of climates wafer with high carrier lifetime that enables solar cells to operate IEC61730 certified by TÜV SÜD to ensure electrical safety · Stringent outgoing quality acceptance criteria benchmarked to - Advanced Mono-crystalline cells for higher conversion efficiency industry standerds

UL1703 (1000 V) listed by CSA for Canada and USA

· CE marked and CEC listed

LINEAR WARRANTY INFORMATION 10-year limited warranty for materials and workmanship 25-year linear power warranty with coverage for power loss greater than 3.5% in the first year and 0.7% degradation per veer thereafter Backed by MEMC

SILVANTIS SERIES: MEMC-M305BMC, MEMC-M310BMC, MEMC-M315BMC, MEMC-M320BMC, MEMC-M325BMC, MEMC-M330BMC

M336 SOLAR MODULE DIMENSIONS mixtigate

TEMPERATURE COEFFICIENTS AND PARAMETERS

 $A = \operatorname{sign}(\operatorname{disk} A) = \mathbb{D} - \operatorname{disk}(\operatorname{disk} A)$ 

Mounting Hole Spacing

PHYSICAL PARAMETERS

Secure where continuents may very by a 164

ELECTRICAL CHARACTERISTICS'

out a factor of their at alteration fact or entitles to 1975, 1982 Vertel, Add. 5, 256. Because described to may one on able and power by \$1500.

Listas specificacos are subject to change altocia cosmitito-

5 10 15 20 25 30 35 Vottope (V)

V CURVES AT MULTIPLE IRRADIANCES (28.0)

F-950(8/4/ 3 166,466

SILVANTIS" M330 SOLAR MODULE

Cable Length

larger-time, day

------ 800 Wimi

7nVW 0000 ------

············· 400 W/m²

...... 200 W/m²

There despites the second to the contribution of description of the contribution of the first State and the contribution of th

Textured glass with Anti-Reflective Coating (ARC) for superior

Positive power tolerance provide increased power output

· Non-corroding anodized aluminum frame for ruggedness

Modules with a range of power output available.

Withstands loads up to 5400 Pa as tested to IEC standards



For more information about MEMC SILVANTIS Modules, please visit www.memc.com

SESCISION RGAS END FRAME PRIDEVLE

DETAIL - L WIND CUTORIT

IV CURVES AT MULTIPLE TEMPERATURES [ 1.0. 4.1.]

0 5 10 15 20 25 30 35 AO 45 50

PRIME SITES CENTRAL ALL 4 COMES

----- 25°C

----- 35°C

----- 45°C

310 Stealth Court, Livermore, CA 94551

Contactor/GFI ReCombiners

PRODUCT FEATURES:

ETL listed to UL-1741

2 to 16 input circuits

enclosure options

continuous duty

seamless gaskets

floating PV arrays

ModBus I/O modules

Optional Transient Surge

Suppression

Rated for 600 VDC and

90C input/output terminals

· NEMA-3/3R, 4 & 4X enclosures

Powder coated and stainless steel

Includes touch safe protective cover

· Cover doors with poured-in-place

· Configured for both positive and

· Clean design for ample wiring room

· Optional current monitoring with

Optional Ground Fault Detection

Configure your BOS

Solutions Online:

350

#2-600

2560 Amps

600 VDC

Up to 200 Amps

3R/4/4X

8.O:

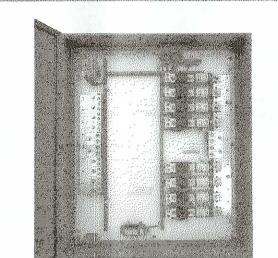
5 to 7 8 to 10 11 to 13 14 to 16 2 to 4 5 to 7 8 to 10 11 to 12

4x#2-600 4x#2-600 6x#2-600 6x#2-600 8x#2-600 4x#2-600 6x#2-600 6x#2-600

& Interruption (GFDI) Sensors

negative grounded arrays

Optional configurations for



SolarBOS ReCombiner RCG-08-250C-N3: 8 Circuits, 250-amp Fuses, Contactors, NEMA-3/3R Enclosure, and Ground Fault Interruption

Highly Configurable

925.456.7744 | www.solarbos.com

Contactor Ampadty

#of Circuits

Approximate Weight (lbs)

Max Output

Current (Continuous)

Voltage

70-100 Amps

#6-350

3R/4/4X

A common part number for a ReCombiner is a RC-04-200-N3.

This reads as a ReCombiner, 4 input circuits with 200-amp fuses

This reads as a ReCombiner, Transient Surge Suppressor, 10 input

This reads as a ReCombiner, 10 input circuits with 200-amp fuses,

This reads as a ReCombiner, Ground Fault Detection/Interruption,

10 input circuits with 200-amp fuses, and NEMA-4 enclosure.

Ground Fault Detection/Interruption—RCG-10-200-N4

circuits with 200-amp fuses, and NEMA-4 enclosure.

\* Larger terminals available upon request. Please ask for details.

\*\* Optional current sensors available. Please see below.

SolarBOS Part Numbers

and NEMA-3/3R enclosure.

SolarBOS ReCombiner Options

Surge Suppression—RCT-10-200-N4

Current Monitoring—RC-10-200M-N4

Monitoring, and NEMA-4 enclosure.

8 to 10 11 to 13 14 to 16

SolarBOS ReCombiners can be specified with 2-16 input circuits with 70 to 400 amp fuses and can be configured with or without current sensors, transient surge suppressors, or GFI sensors. Input/Output terminals are rated for 90C and enclosures are available in NEMA-3R and NEMA-4 powder coated or stainless steel.

Made in California

SolarBOS products are designed and manufactured with the system integrator in mind, using the highest quality components to ensure long-term field reliability. All products are assembled in our ETL certified facility in Livermore, California, and we guarantee customer satisfaction.

BALANCE OF SYSTEM PRODUCTS FOR THE SOLAR INDUSTRY

www.solarbos.com

**ReCombiner Contactor Specifications** 

#6-350

600 VDC

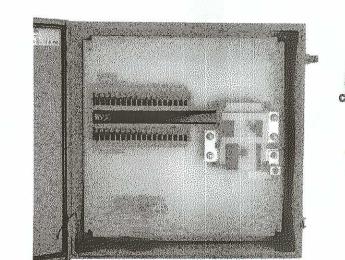
Up to 200 Amps

3R/4/4X

310 Stealth Court, Livermore, CA 9455 925,456,7744 | www.solarbos.com

**Disconnect Combiners** 

SolarBOS now offers combiners with integrated load-break 600 VDC and 1000 VDC disconnects. This allows installers to further reduce system costs by merging the combiner box with the disconnect switch lifto one product



SolarBOS Disconnect Combiner CS400-36-15-N3

A New Standard in Safety SolarBOS disconnect combiners can be specified with up to 36 input circuits with a variety of switch sizes up to 400 amps and NEMA-3R, 4, or 4X enclosures. All combiner enclosures come with complete gasketed seals for better protection from the elements as well as plenty of wiring room for ease of installation.

Made in California SolarBOS products are designed and manufactured with the system integrator in mind, using the highest quality components to ensure long-term field reliability. All products are assembled in our ETL certified facility in Livermore, California, and we guarantee customer satisfaction.

BALANCE OF SYSTEM PRODUCTS FOR THE SOLAR INDUSTRY

Configure your BOS Solutions Online: www.solarbos.com

PRODUCT FEATURES:

· ETL listed to UL-1741

· 6 to 36 input circuits

90C output terminals

enclosure options

and continuous duty

seamless gaskets

· Touch-safe fuse holders

· NEMA-3R, 4 & 4X rated

· Steel or fiberglass enclosures

· Rated for 600 VDC or 1000 VDC

· Cover doors with poured-in-place

· Configured for both positive and

Clean design for ample wiring room

negative grounded arrays

· 100, 200, 250 and 400 amp

integrated disconnects

SolarBOS Part Numbers A common part number for a disconnect combiner is a CS200-12-15-N3. This reads as a combiner, single output, 200 amp disconnect, 12 input circuits with 15-amp fuses and NEMA-3/3R enclosure. Two example part numbers are explained below: C\$100-04-08-4XF Combiner, Single output, 100 amp disconnect, 4 circuit, with 8-amp fuses and NEMA-4X fiberglass enclosure

Combiner, Single output, 400 amp disconnect, 12 circuit, with 15-amp fuses and NEMA-3/3R steel enclosure

MUNICIPAL APPROVALS MARCH, 2014 BY THE TOWN OF 3-24-4

EQUIPMENT DETAILS SHOWN FOR REFERENCE ONLY ACTUAL DETAILS TO BE PROVIDED ON CONSTRUCTION DRAWINGS

Disconnect Combiner Specifications

SolarBOS combiners offer many configuration options, including number of input circuits, number of Due to the flexibility of SolarBOS products, part numbers reflect the specific construction of the

combiners. Please contact SolarBOS directly for help specifying a combiner for your application.

Asconnect Ampadity	100 Amps			200 Amps		250 Ampu		400 Amps			
Guadaer of Imput Circuits		6 to 24			6 to 36		8 to 36		8 to 36		
isguet Conductor Spo (On 869G)		#14 to 4	<i>B</i>	1	#14 to 4			#14 to 4		8141	04
Max Fore Star Gaups)	mm march 1 8 4 1 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1	30			30			30		30	
idau flated Corrent (ADC Contemporal		100			200	nolli ja	250		400		
Seminar of Challes S Considerations		1		1		1					
Output Constactor Size Battere (Carer St. 800 Ca	#6 to 350		Y.	#6 to 350			#64o 350		#2 to	600	
Steal Enclosure Discondune (suches)	20x20x6 24x24x6		4x24x6	20x26x6		24х24ж6	20x20xs	6	24a(24a)(o	24ેમ24ેમઇ	30x30xd
Aspess Melglet Sussilia Contact to Statution Steels	50 %s		55 fbs		58 lbs		95 lbs				
Filherethea Earlyses e Batesead Daneyerens Castado	1846:0	24s:20s:08	2452468	18x16x8	24x26x8	24x24x8	18x16x8	24x24x8	26246	24:24:8	36x30x6
Caralles (CCC)A		3R/4/4X		sametatena 33	3R/4/4X			30/4/4X		3R/4/4X	

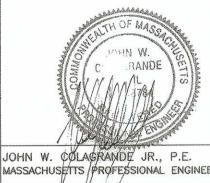
CS400-12-15-N3

Configure your BOS Solutions Online: www.solarbos.com

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WHITMAN

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	(3)	00) 020-0022
NO.	DATE:	REVISION DESCRIPTION
0	7/12/13	PRELIMINARY SUBMISSION
1	11/01/13	COMMENTS INCORPORATED
2	02/18/14	COMMENTS INCORPORATED
3	03/04/14	COMMENTS INCORPORATED
4	3/12/14	FINAL SUBMISSION
21		

PROJECT:

1.3068 MW (DC) TOTAL 1.0 MW (AC) TOTAL GROUND MOUNTED PHOTOVOLTAIC SYSTE SUN EDISON # MA-12-0172 TRI-COUNTY REGIONAL VOCATIONAL SCHOOL OLD W CENTRAL ST. POLE 74-2

FRANKLIN, MA 02038 AS SHOWN TASK.: 3/13/2014 PROJECT No: 130206T

DRAWN BY: C.A. REVIEWED BY: C.R. DRAWING TITLE:

EQUIPMENT SPECIFICATIONS

DRAWING NO .: SP-6

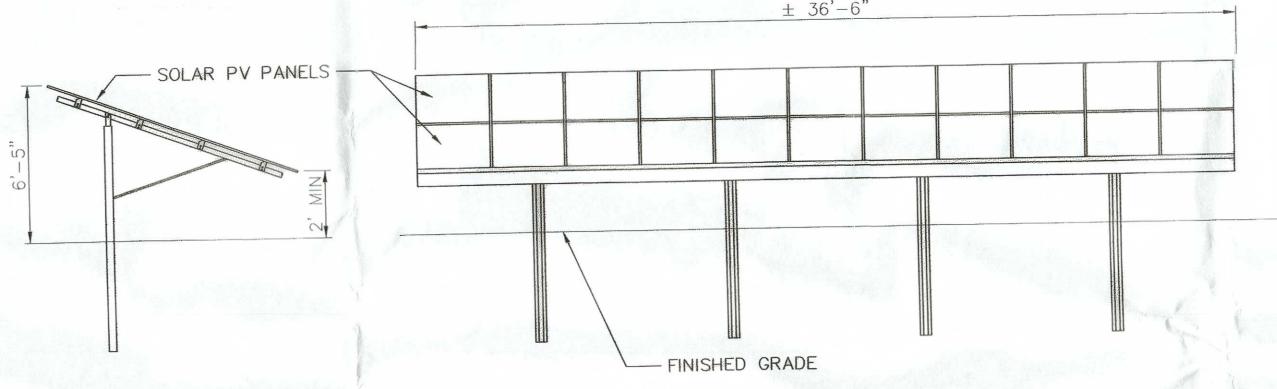
SHEET NO .: OF 13 9

RACKING SHOWN ONLY AS GRAPHICAL REPRESENTATION. ACTUAL RACKING MAY VARY.

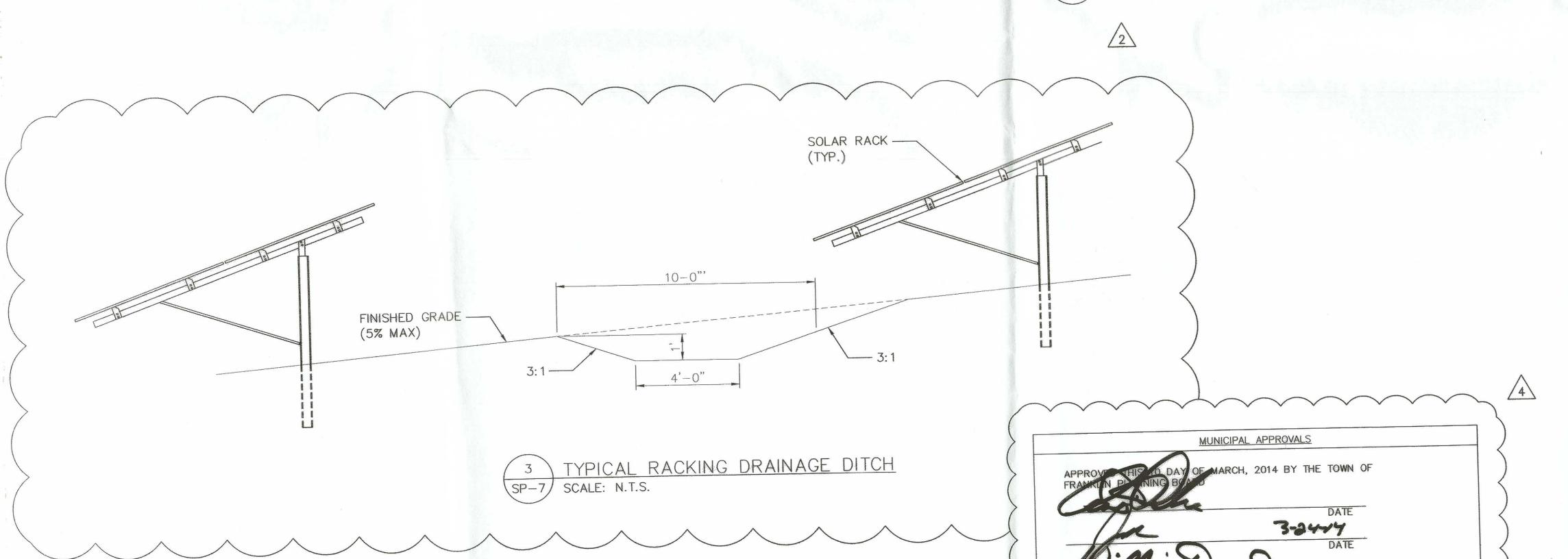
## NOTES:

- 1. PRELIMINARY DESIGN FOR DISCUSSION PURPOSES DURING MUNICIPAL APPROVAL PROCESS. DO NOT USE FOR CONSTRUCTION. REFER TO MANUFACTURERS INSTALLATION MANUALS FOR EXACT CONNECTION LOCATIONS AND MOUNTING REQUIREMENTS.
- 2. SUNEDISON RESERVES THE RIGHT TO PROVIDE AN APPROVED EQUAL RACKING SYSTEM.
- 3. DETAILS AND CALCULATIONS FOR THE PROPOSED PANEL FOOTINGS SHALL BE PROVIDED TO THE TOWN ENGINEER PRIOR TO A PRE-CONSTRUCTION MEETING. DETAILS AND CALCULATIONS SHALL BE PREPARED BY A MASSACHUSETTS LICENSED PROFESSIONAL ENGINEER TO ADDRESS THE STRUCTURAL INTEGRITY OF THE PROPOSED FOOTINGS.



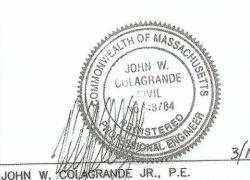


TYPICAL RACKING SYSTEM DETAILS





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pro-tech energy solutions ...

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1			
NO.	DATE:	REVISION DESCRIPTION	
0	7/12/13	PRELIMINARY SUBMISSION	
1	11/01/13	COMMENTS INCORPORATED	
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4	3/12/14	FINAL SUBMISSION	

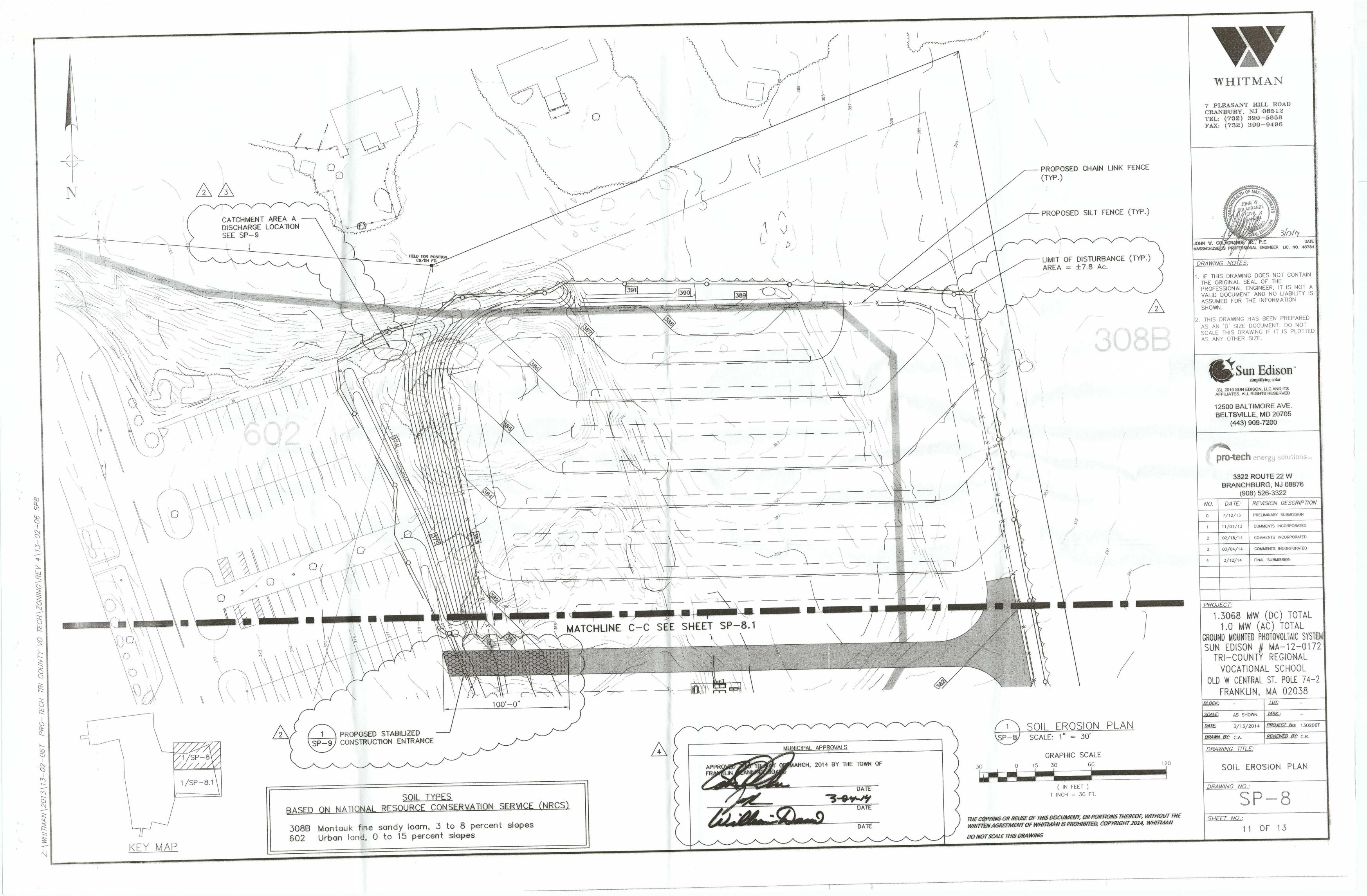
1.3068 MW (DC) TOTAL 1.0 MW (AC) TOTAL GROUND MOUNTED PHOTOVOLTAIC SYSTEM SUN EDISON # MA-12-0172 TRI-COUNTY REGIONAL

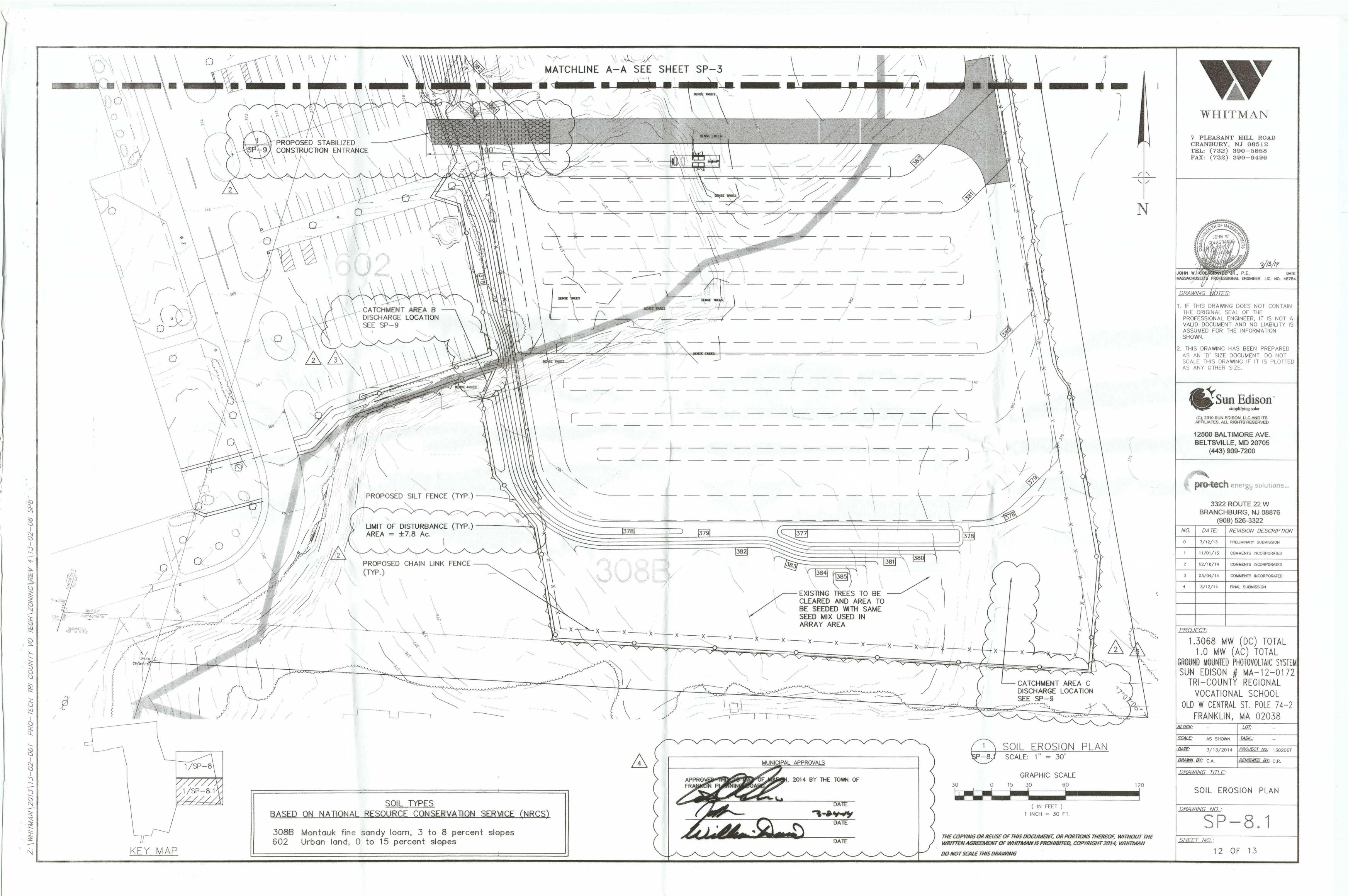
VOCATIONAL SCHOOL OLD W CENTRAL ST. POLE 74-2 FRANKLIN, MA 02038

BLOCK:	_	LOT:	-
SCALE:	AS SHOWN	TASK.:	_
DATE:	3/13/2014	PROJECT No:	13020
DRAWN B	<u>Y:</u> C.A.	REVIEWED BY	C.R.
DRAWII	NG TITLE:		

TYPICAL RACKING DETAILS

SP-7SHEET NO .: 10 OF 13





A UNIFORM APPLICATION TO A DEPTH OF 4 INCHES (UNSETTLED) IS RECOMMENDED IN LANDSCAPE AREAS ONLY. SOILS WITH A PH OF 4.0 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM DEPTH OF 24 INCHES OF SOIL HAVING PH OF 5.0 OR MORE.

TREE PROTECTION DURING CONSTRUCTION

METHODS AND MATERIALS BOARDS WILL NOT BE NAILED TO TREES DURING BUILDING OPERATIONS. FEEDER ROOTS SHOULD NOT BE CUT IN AN AREA INSIDE THE DRIP LINE OF THE TREE BRANCHES. ALL ROOT SYSTEMS WITHIN THE DRIP LINE SHOULD BE PROTECTED TO THE FULLEST EXTENT POSSIBLE.

DAMAGED TRUNKS OR EXPOSED ROOTS SHOULD HAVE DAMAGED BARK REMOVED IMMEDIATELY AND NO PAINT SHALL BE APPLIED. EXPOSED ROOTS SHOULD BE COVERED WITH TOPSOIL IMMEDIATELY AFTER EXCAVATION IS COMPLETE. ROOTS SHALL BE PRUNED TO GIVE A CLEAN, SHARP SURFACE AMENABLE TO HEALING. ROOTS EXPOSED DURING HOT WEATHER SHOULD BE IRRIGATED TO PREVENT PERMANENT TREE INJURY. CARE FOR SERIOUS INJURY SHOULD BE PRESCRIBED BY A PROFESSIONAL FORESTER OR CERTIFIED TREE EXPERT.

TREE LIMB REMOVAL, WHERE NECESSARY WILL BE DONE AS NATURAL TARGET PRUNING TO REMOVE THE DESIRED BRANCH AS CLOSE AS POSSIBLE TO BRANCH COLLAR. THERE SHOULD BE NO FLUSH CUTS. FLUSH CUTS DESTROY A MAJOR DEFENSE SYSTEM OF THE TREE. NO TREE PAINT SHALL BE APPLIED. ALL CUTS SHALL BE MADE AT THE OUTSIDE EDGE OF THE BRANCH COLLAR. CUTS MADE TOO FAR BEYOND THE BRANCH COLLAR MAY LEAD TO EXCESS SPROUTING, CRACKS AND ROT. REMOVAL OF A "V" CROTCH SHOULD BE CONSIDERED FOR FREE STANDING SPECIMEN TREES TO AVOID FUTURE SPLITTING DAMAGE.

ALL TREES MARKED ON THE PLAN TO BE PROTECTED SHALL HAVE TREE WRAP APPLIED TO THE TRUNKS. THE TREE WRAP SHALL BE APPLIED FROM THE BASE OF THE EXPOSED TRUNK TO APPROX. 5-6" UP THE TRUNK TO PREVENT HARMFUL SCRAPING/DAMAGE TO BARK BY MACHINERY.

#### TOPSOILING MATERIALS

TOPSOIL SHOULD BE FRIABLEI, LOAMY2, FREE OF DEBRIS, OBJECTIONABLE WEEDS AND STONES, AND CONTAIN NO TOXIC SUBSTANCE OR ADVERSE CHEMICAL OR PHYSICAL CONDITION THAT MAY BE HARMFUL TO PLANT GROWTH. SOLUBLE SALTS SHOULD NOT BE EXCESSIVE (CONDUCTIVITY LESS THAN 0.5 MILLIMHOS PER CENTIMETER. MORE THAN 0.5 MILLIMOHS MAY DESICCATE SEEDLINGS AND ADVERSELY IMPACT GROWTH). TOPSOIL HAULED IN FROM OFFSITE SHOULD HAVE A MINIMUM ORGANIC MATTER CONTENT OF 2.75 PERCENT. ORGANIC MATTER CONTENT MAY BE RAISED BY ADDITIVES.

TOPSOIL SUBSTITUTE IS A SOIL MATERIAL WHICH MAY HAVE BEEN AMENDED WITH SAND, SILT, CLAY, ORGANIC MATTER, FERTILIZER, OR LIME AND HAS THE APPEARANCE OF TOPSOIL. TOPSOIL SUBSTITUTES MAY BE UTILIZED ON SITES WITH INSUFFICIENT TOPSOIL FOR ESTABLISHING PERMANENT VEGETATION. ALL TOPSOIL SUBSTITUTE MATERIALS SHALL MEET THE REQUIREMENTS OF TOPSOIL NOTED ABOVE SOIL TESTS SHALL BE PERFORMED TO DETERMINE THE COMPONENTS OF SAND, SILT, CLAY, ORGANIC MATTER, SOLUBLE SALTS, AND PH LEVEL.

1. FRIABLE MEANS EASILY CRUMBLED IN THE FINGERS, AS DEFINED IN MOST SOILS

2. LOAMY MEANS TEXTURE GROUPS CONSISTING OF COARSE LOAMY SANDS, SANDY LOOM, FINE AND VERY FINE SANDY LOAM, LOAM, SILT LOAM, CLAY LOAM, SANDY CLAY LOAM, AND SILTY CLAY LOAM TEXTURES AND HAVING LESS THAN 35% COARSE FRAGMENTS (PARTICLES LESS THAN 2MM IN SIZED AS DEFINED IN THE GLOSSARY OF SOIL SCIENCE TERMS, 1996, SOIL SCIENCE SOCIETY OF AMERICA.)

#### TEMPORARY SEEDING NOTES

SEEDING

CONVENTIONAL SEEDING - APPLY SEED UNIFORMLY BY HAND, CYCLONE CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTIPACKER SEEDER. EXCEPT FOR DRILLED, HYDROSEED, OR CULTIPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL, TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE

LYDROSEEDING - HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY NVOLVING A TRUCK OR TRAILER MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORT FIBERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL POOR SEED TO SOIL CONTACT OCCURS REDUCING SEED GERMINATION AND GROWTH. HYDROGENATING MAY BE USED FOR AREAS TOO STEEP FOR CONVENTIONAL EQUIPMENT TO TRAVERSE OR TOO OBSTRUCTED WITH

#### METHODS AND MATERIALS

A PREVENTATIVE MAINTENANCE PROGRAM ANTICIPATES REQUIREMENTS AND ACCOMPLISHES WORK WHEN IT CAN BE DONE WITH LEAST EFFORT AND EXPENSE TO INSURE ADEQUATE VEGETATIVE COVER. MAINTENANCE SHOULD OCCUR ON A REGULAR BASIS, CONSISTENT WITH FAVORABLE

PLANT GROWTH, SOIL, AND CLIMATIC CONDITIONS. THIS INVOLVES REGULAR SEASONAL WORK FOR MOWING, FERTILIZING, LIMING, WATERING, PRUNING, FIRE CONTROL, WEED AND PEST CONTROL, RESENDING, AND TIMELY REPAIRS. THE DEGREE OF PREVENTATIVE MAINTENANCE NEEDED DEPENDS UPON THE TYPE OF

VEGETATION AND ITS PROPOSED FUNCTION OR USE. MOWING IS A RECURRING PRACTICE AND ITS INTENSITY DEPENDS UPON THE

FUNCTION OF THE GROUND COVER. ON HIGH TO MODERATE MAINTENANCE AREAS, SUCH AS LAWNS, CERTAIN RECREATION FIELDS, AND PICNIC AREAS, MOWING WILL BE FREQUENT (2 TO 7 DAY INTERVALS). LOW MAINTENANCE AREAS MAY BE LEFT UNMOVED TO PERMIT NATURAL SUCCESSION.

FERTILIZER AND LIME SHOULD BE APPLIED AS NEEDED TO MAINTAIN A DENSE STAND OF DESIRABLE SPECIES. FREQUENTLY MOWED AREAS AND THOSE ON SANDY SOILS WILL REQUIRE MORE FERTILIZATION.

LIME REQUIREMENT SHOULD BE DETERMINED BY SOIL TESTING EVERY 2 OR 3 YEARS. FERTILIZATION INCREASES THE NEED FOR LIMING.

WEED INVASION MAY RESULT FROM ABUSIVE MOWING AND FROM INADEQUATE FERTILIZING AND LIMING. BRUSH INVASION IS A COMMON CONSEQUENCE OF LACK OF MOWING. THE AMOUNT OF WEEDS OR BRUSH THAT CAN BE TOLERATED IN ANY VEGETATED AREA DEPENDS UPON THE INTENDED USE OF THE LAND. DRAINAGE VAYS ARE SUBJECT TO RAPID INFESTATION BY WEED AND WOODY PLANTS. THESE SHOULD BE CONTROLLED, SINCE THEY OFTEN REDUCE DRAINAGE WAY EFFICIENCY. CONTROL OF WEEDS OR BRUSH IS ACCOMPLISHED BY USING HERBICIDES OR

PEST AND DISEASE CONTROLS ARE MORE NECESSARY ON HIGH MAINTENANCE AREAS THAN FOR LOW MAINTENANCE AREAS. RECOMMENDATIONS FOR RESOLVING FERTILIZER, LIME, PEST AND OTHER MAINTENANCE PROBLEMS MAY BE OBTAINED FROM RUTGERS COOPERATIVE EXTENSION.

FIRE HAZARD IS GREATER WHERE DRY VEGETATION HAS ACCUMULATED. THE TALLER THE VEGETATION, THE GREATER THE HAZARD.

SEED MIXTURE

COOL SEASON SEED MIXTURES

HARD FESCUE

CREEPING FESCUE

PERENNIAL RYEGRASS

PRUNE TREES AND SHRUBS TO REMOVE DEAD OR DAMAGED BRANCHES. REMOVE UNDESIRABLE OR INVASIVE PLANTS TO MAINTAIN INTEGRITY OF THE LANDSCAPE AND ENHANCE QUALITY OF PERMANENT VEGETATIVE COVER.

PLANTING RATE

120

2.7

0.7

. SEEDING RATES SPECIFIED ARE REQUIRED WHEN A REPORT OF COMPLIANCE IS REQUESTED PRIOR TO ACTUAL ESTABLISHMENT OF PERMANENT VEGETATION. UP TO 50%

CHECKED BY THE STATE SEED ANALYST, MASSACHUSETTS DEPARTMENT OF AGRICULTURE, WILL ASSURE THE PURCHASER THAT THE MIXTURE OBTAINED IS THE MIXTURE ORDERED.

A. INFREQUENT OR NO MOWING, FERTILIZATION AND LIME THE FIRST YEAR OF ESTABLISHMENT (EXAMPLES - ROADSIDES, RECREATION AREAS, PUBLIC OPEN SPACES).

REDUCTION IN RATES MAY BE USED WHEN PERMANENT VEGETATION IS ESTABLISHED PRIOR TO A REPORT OF COMPLIANCE INSPECTION. THESE RATES APPLY TO ALL METHODS OF SEEDING, ESTABLISHING PERMANENT VEGETATION MEANS 80% VEGETATIVE COVERAGE OF THE SEEDED AREA AND MOWED ONCE, GRASS SEED MIXTURE

#### STABILIZATION WITH MULCH ONLY

THIS PRACTICE IS APPLICABLE TO AREAS SUBJECT TO EROSION, WHERE THE SEASON AND OTHER CONDITIONS MAY NOT BE SUITABLE FOR GROWING AN EROSION-RESISTANT COVER OR WHERE STABILIZATION IS NEEDED FOR A SHORT PERIOD UNTIL MORE SUITABLE PROTECTION CAN BE APPLIED.

#### METHODS AND MATERIALS

SITE PREPARATION GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH

INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.

# UNFROSTED SMALL-GRAIN STRAW, OR SALT HAY AT 2.0 TO 2.5 TONS PER ACRE IS SPREAD UNIFORMLY PER 1,000 SQUARE FEET AND ANCHORED WITH A MULCH

ANCHORING TOOL, LIQUID MULCH BINDERS, OR NETTING TIE DOWN. OTHER SUITABLE MATERIALS MAY BE USED UNDER SUITABLE CONDITIONS AND IN QUANTITIES AS RECOMMENDED BY THE SOIL CONSERVATION DISTRICT.

ASPHALT EMULSION IS RECOMMENDED AT THE RATE OF 600 TO 1,200 GALLONS PER ACRE. THIS IS SUITABLE FOR A LIMITED PERIOD OF TIME WHERE TRAVEL BY PEOPLE, ANIMALS, OR MACHINES IS NOT A PROBLEM.

SYNTHETIC OR ORGANIC SOIL STABILIZERS MAY BE USED UNDER SUITABLE CONDITIONS AND IN QUANTITIES AS RECOMMENDED BY THE MANUFACTURER.

WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 POUNDS PER ACRE (OR ACCORDING TO THE MANUFACTURER'S REQUIREMENTS) MAY BE APPLIED BY A

MULCH NETTING, SUCH AS PAPER JUTE, EXCELSIOR, COTTON OR PLASTIC MAY BE

WOODCHUCKS APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 2 INCHES MAY BE USED. WOODCHUCKS WILL NOT BE USED ON AREAS WHERE FLOWING WATER COULD WASH THEM INTO AN INLET AND PLUG IT.

AFTER SEEDING, FIRMING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY, AND IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE

MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. THE EXISTENCE OF VEGETATION OF VEGETATION SUFFICIENT TO CONTROL SOIL EROSION SHALL BE DEEMED COMPLIANCE WITH THIS MULCHING

STRAW OR HAY - UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, OR SALT HAY TO BE APPLIED AT THE RATE OF 1-1/2 TO 2 TONS PER ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF A LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION IS 3 TONS PER ACRE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MULCH. HAY MULCH IS NOT RECOMMENDED FOR ESTABLISHING FINE TURF OR LAWNS DUE TO THE PRESENCE OF WEED SEED.

APPLICATION — SPREAD MULCH UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 85% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND—SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTE 70 TO 90 POUNDS WITHIN EACH SECTION. ANCHORING SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND

PEG AND TWINE - DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRISS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.

MULCH NETTINGS - STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTINGS TO THE SOIL SURFACE. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED. CRIMPER (MULCH ANCHORING COULTER TOOL) - A TRACTOR-DRAWN IMPLEMENT,

SOMEWHAT LIKE A DISC-HARROW, ESPECIALLY DESIGNED TO PUSH OR CUT SOME OF THE BROADCAST LONG FIBER MULCH 3 TO 4 INCHES INTO THE SOIL AS TO ANCHOR IT AND LEAVE PART STANDING UPRIGHT. THIS TECHNIQUE IS LIMITED TO AREAS TRAVERSABLE BY A TRACTOR, WHICH MUST OPERATE ON THE CONTOUR OF SLOPES. STRAW MULCH RATE MUST BE 3 TONS PER ACRE. NO TACKIFYING OR ADHESIVE AGENT

LIQUID MULCH-BINDERS - MAY BE USED TO ANCHOR SALT HAY, HAY OR STRAW MULCH. APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND MAY CATCH THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. THE REMAINDER OF THE AREA SHOULD BE UNIFORM IN APPEARANCE. USE ONE OF THE FOLLOWING:

1. ORGANIC AND VEGETABLE BASED BINDERS — NATURALLY OCCURRING, POWDER BASED, HYDROPHILIC MATERIALS WHEN MIXED WITH WATER FORMULATED A GEL AND WHEN APPLIED TO MULCH UNDER SATISFACTORY CURING CONDITIONS WILL FORM MEMBRANE NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOTOXIC EFFECT OR IMPEDE THE GROWTH OF TURF GRASS. USE AT RATES AND WEATHER
CONDITIONS AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH
MATERIALS. MANY NEW PRODUCTS ARE AVAILABLE, SOME OF WHICH MAY NEED FURTHER EVALUATION FOR USE IN THIS STATE.

SYNTHETIC BINDERS — HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND FOLLOWING APPLICATION TO MULCH, DRYING AND CURLING SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. IT SHALL BE APPLIED AT RATES RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL

ALL NAMES GIVEN ABOVE ARE REGISTERED TRADE NAMES. THIS DOES NOT CONSTITUTE A RECOMMENDATION OF THESE PRODUCTS TO THE EXCLUSION OF OTHER PRODUCTS.

PERMANENT VEGETATIVE MIXTURES, PLANTING RATES AND PLANTING DATES

ZONE 5B, 6A

5/31 7/31 10/31 4/30

PLANTING DATES

O = OPTIMAL PLANTING PERIOD A = ACCEPTABLE PLANTING PERIOD

PLANT HARDINESS ZONES

8/14

WOOD-FIBER OR PAPER-FIBER MULCH - SHALL BE MADE FROM WOOD, PLANT FIBERS OR PAPER CONTAINING NO GROWTH OR GERMINATION INHIBITING MATERIALS, USED AT THE RATE OF 1,500 POUNDS PER ACRE (OR AS RECOMMENDED BY THE PRODUCT MANUFACTURER) AND MAY BE APPLIED BY A HYDROSEEDER. THIS MULCH SHALL NOT BE MIXED IN THE TANK WITH SEED. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL

PELLETIZED MULCH - COMPRESSED AND EXTRUDED PAPER AND/OR WOOD FIBER PRODUCT, WHICH MAY CONTAIN CO-POLYMERS, TACKIFIERS, FERTILIZERS AND COLORING AGENTS. THE DRY PELLETS, WHEN APPLIED TO A SEEDED AREA AND WATERED, FORM A MULCH MAT. PELLETIZED MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. MULCH MAY BE APPLIED BY HAND OR MECHANICAL SPREADER AT THE RATE OF 60 TO 75 LBS. PER 1,000 QUARE FEET AND ACTIVATED WITH 0.2 TO 0.4 INCHES OF WATER. THIS MATERIAL HAS BEEN FOUND TO BE BENEFICIAL FOR USE ON SMALL LAWN OR RENOVATION AREAS, SEEDED AREAS WHERE WEED-SEED FREE MULCH IS DESIRED OR ON SITES WHERE STRAW MULCH AND TACKIFIER AGENTS ARE NOT PRACTICAL OR DESIRABLE. APPLYING THE FULL 0.2 TO 0.4 INCHES OF WATER AFTER SPREADING PELLETIZED MULCH ON THE SEEDBED IS EXTREMELY IMPORTANT FOR SUFFICIENT ACTIVATION AND EXPANSION OF THE MULCH TO PROVIDE SOIL COVERAGE.

ZONE 7A, 78

11/15 4/30 8/14 11/30

## TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION WHERE APPLICABLE

ON EXPOSED SOILS THAT HAVE THE POTENTIAL FOR CAUSING OFF-SITE ENVIRONMENTAL DAMAGE.

METHODS AND MATERIALS

SITE PREPARATION

GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION AND MULCH ANCHORING. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, BRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.

IMMEDIATELY PRIOR TO SEEDING, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.)

A) APPLY GROUND LIMESTONE AT A RATE OF 90 LBS. PER 1000 S.F. B) APPLY FERTILIZER (10-20-10) AT A RATE OF 11 LBS. PER 1000 SQ. FT. C) APPLY PERENNIAL RYEGRASS SEED AT 1 LB. PER 1000 SQ. FT. AND ANNUAL RYEGRASS AT 1LB. PER 1000 SQ. FT. D) MULCH STOCKPILE WITH STRAW OR HAY AT A RATE OF 90 LBS. PER 1000

E) APPLY A LIQUID MULCH BINDER OR TACK TO STRAW OR HAY MULCH. F) PROPERTY ENTRENCH A SILT FENCE AT THE BOTTOM OF THE STOCKPILE.

A) APPLY GROUND LIMESTONE AT A RATE OF 90 LBS. PER 1000 SQ. FT. B) APPLY FERTILIZER (10-20-10) AT A RATE OF 11 LBS. PER 1000 SQ. FT. C) APPLY PERENNIAL RYEGRASS SEED AT 1 LB. PER 1000 SQ. FT. AND ANNUAL RYEGRASS AT 1 LB. PER 1000 SQ. FT. AND ANNUAL RYEGRASS AT

1 LB. PER 1000 SQ. FT. D) MULCH STOCKPILE WITH STRAW OR HAY AT A RATE OF 90 LBS. PER 1000 E) APPLY A LITTLE MULCH SUNDER OR TACK TO STRAW OR HAY MULCH.

PERMANENT STABILIZATION SPECIFICATIONS A) APPLY TOPSOIL TO A DEPTH OF 6 INCHES (UNSETTLED). B) APPLY GROUND LIMESTONE AT A RATE OF 90 LBS. PER 1000 SQ. FT AND EQUIR INCLES INTO SOIL C) APPLY FERTILIZER (10-20-10) AT A RATE OF 11 LBS. PER 1000 SQ. FT. D) APPLY HARD FESCUE SEED AT 2.7 LBS. PER 1000 SQ. FT. AND CREEPING RED FESCUE SEED AT 0.7 LB. PER 1000 SQ. FT AND PERENNIAL RYEGRASS

SEED AT 1 LB. PER 1000 SQ. FT. E) MULCH STOCKPILE WITH STRAW OR HAY AT A RATE OF 90 LBS. PER 1000 F) APPLY A LIQUID MULCH BINDER OR TACK TO STRAW OR HAY MULCH.

STABILIZED CONSTRUCTION ENTRANCE NOTES: 1. THE CONTRACTOR SHALL PROVIDE A STABILIZED CONSTRUCTION ENTRANCE PAD, IN ACCORDANCE WITH THE SOIL EROSION AND SEDIMENT CONTROL STANDARDS, AT THE CONSTRUCTION VEHICLE ACCESS LOCATION. THE ACTUAL LOCATION OF THE STABILIZED CONSTRUCTION ENTRANCE PAD SHALL BE SELECTED IN COOPERATION WITH THE SOIL CONSERVATION DISTRICT REPRESENTATIVE

2. ANY SOIL WASHED, DROPPED OR SPILLED OR TRACKED OUTSIDE OF THE LIMITS OF DISTURBANCE ONTO THE PUBLIC RIGHT-OF-WAY SHALL BE REMOVED BY THE 4. ALL INFORMATION SHOWN MUST BE VERIFIED PRIOR TO USE FOR CONSTRUCTION

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING THE WHEELS OF ALL CONSTRUCTION VEHICLES TO REMOVE SEDIMENT AWAY FROM.

6. PROVIDE ASTM C-33 SIZE NO.2 (2-1/2 TO 1-1/2") OR 3 (2 TO 1IN.) CLEAN CRUSHED ANGULAR STONE, IN A MINIMUM 6 INCH THICK LAYER.

7. THE LENGTH OF THE ACCESS SHALL BE AS PER THE TABLE, UNLESS OTHERWISE NOTED, AND THE WIDTH SHALL BE NOT LESS THAN THE FULL WIDTH OF THE POINTS OF INGRESS AND DEGREES.

8. PAVED TRANSITION AREA WILL BE MAINTAINED BETWEEN THE STONE ACCESS AND THE LOCAL ACCESS ROADWAY.

9. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING, OR FLOWING OF SEDIMENT ONTO THE ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO THE ROADWAY MUST BE REMOVED IMMEDIATELY.

#### DUST CONTROL NOTES

REMARKS

LOW MAINTENANCE

FINE FESCUE LAWN

THE FOLLOWING METHODS SHOULD BE CONSIDERED FOR CONTROLLING DUST: 1. MULCHES - SEE STANDARD FOR STABILIZATION WITH MULCHES ONLY

. VEGETATIVE COVER - SEE STANDARD FOR TEMPORARY VEGETATIVE COVER. PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION AND PERMANENT

SPRAY-ON ADHESIVES - ON MINERAL SOILS (NOT EFFECTIVE ON MUCK SOLID). KEEP

4. TILLAGE - TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT TWELVE INCHES APART, AND SPRING-TOOTHED HARROWS ARE EXAMPLES OF EQUIPMENTS WHICH MAY PRODUCE THE DESIRED EFFECT.

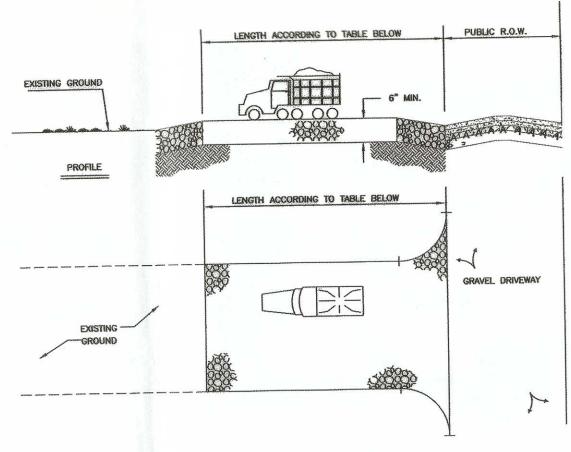
5. SPRINKLING - SITE IS SPRINKLED UNTIL THE SURFACE IS WET.

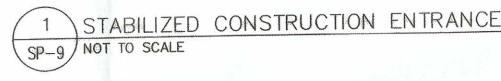
6. BARRIERS — SOLID BOARD FENCES, SNOW FENCES, BURLAP FENCES, CRATE WALLS, BALES OF HAY, AND SIMILAR MATERIAL CAN BE USED TO CONTROL ARE CURRENTS AND SOIL BLOWING. 7. CALCIUM CHLORIDE - SHALL BE IN THE FORM OF LOOSE, DRY GRANULATES OF FLAKES

FINE ENOUGH TO FEED THROUGH COMMONLY USED SPREADERS AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE. IF USED ON STEEPER SLOPES, THEN USE OTHER PRACTICES TO PREVENT WASHING INTO STREAMS, OR ACCUMULATION AROUND PLANTS.

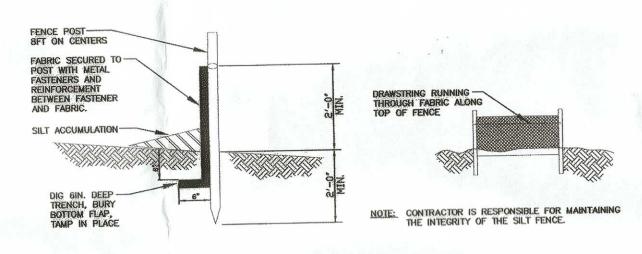
8. STONE - COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL. DUST CONTROL MATERIALS TABLE

MATERIAL	WATER	TYPE OF NOZZLE	APPLY GALLONS/ACRE
LATEX EMULSION	12:5:1	FINE SPRAY	235
RESIN IN WATER	4:1	FINE SPRAY	300
POLYACRYLAMIDE (PAM) — SPRAY ON POLYACRYLAMIDE (PAM) — DRY SPRAY	MANUF MAY ADDITO FLOC	ALSO BE US	ISTRUCTIONS. SED AS AN NT BASINS TO PRECIPITATE OLLOIDS. IN STANDARD
ACIDULATED SOY BEAN SOAP STICK	NONE	COARSE SPRAY	1200





PERCENT	SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED SOILS		
		COARSE GRAINED SOILS	100 ft.	
	0 TO 2%	50 ft.	200 ft.	
, A	2 TO 5%	100 ft.		
	>5%	ENTIRE SURFACE STABILIZED	D WITH FABC BASE COURSE	





SILT FENCE DETAIL (FOR SOIL AREAS)

TEMPORARY TOPSOIL STOCKPILE NOT TO SCALE

## FOR RUNOFF CALCULATIONS SEE REPORT PREPARED BY STRONG CIVIL DESIGN DATED 3/3/14.

### CONSTRUCTION PERIOD POLLUTION PREVENTION PLAN

THE FOLLOWING EROSION CONTROL MEASURES SHALL BE IMPLEMENTED DURING

THE OWNER AND CONTRACTOR ARE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF THE SILT FENCE, AND ALL OTHER POLLUTION PREVENTION MEASURES THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.

SHOULD GROUNDWATER PUMPING BE REQUIRED DURING CONSTRUCTION, ALL PUMPED GROUNDWATER SHALL BE TREATED PRIOR TO DISCHARGE. DIRECT DISCHARGE OF PUMPED GROUNDWATER IS STRICTLY PROHIBITED. 3. SILT FENCE SHALL BE PLACED ON THE DOWN GRADIENT SIDE OF ANY AND

ALL STOCKPILED SOIL. 4. THERE SHALL BE NO STORAGE OF HAZARDOUS MATERIAL ONSITE (SUCH AS FUELS, HYDRAULIC FLUIDS AND OILS). 5. A SPILL CLEAN-UP KIT SHALL BE ONSITE AT ALL TIMES.

6. ANY AREA DISTURBED BY CONSTRUCTION THAT WILL REMAIN UNDISTURBED LONGER THAN 14 DAYS SHALL BE STABILIZED WITH HYDRO-SEEDING OR OTHER APPROPRIATE MEASURES. 7. ADDITIONAL SEDIMENTATION CONTROL DEVICES SHALL BE KEPT ON-SITE

DURING CONSTRUCTION AND SHALL BE INSTALLED AT ANY TIME DURING CONSTRUCTION IF INSTRUCTED BY THE ENGINEER OR TOWN. 8. INSPECTION OF MAINTENANCE OF THE EROSION CONTROL FEATURES SHALL BE CONDUCTED WEEKLY OR AFTER ANY STORM EVENT WITH A DEPTH OF 1/2-INCH OR GREATER AND RECORDED.

9. ALL SEDIMENTATION COLLECTED DURING CONSTRUCTION SHALL BE DISPOSED

THE LONG TERM POLLUTION PREVENTION PLAN

OPERATOR OF THE PROPOSED SOLAR FIELD SYSTEM.

THE PROPOSED STORMWATER MANAGEMENT SYSTEM IS DESIGNED TO REQUIRE MINIMAL TO NO MAINTENANCE.

1. NO MOWING OR MAJOR PLANT CLEARING EXCEPT AS NEEDED FOR MAJOR REPAIRS. ALL GRASS CLIPPINGS SHALL BE DISPOSED OF OFFSITE.

QUARTERLY INSPECTIONS OF THE DRAINAGE FACILITIES WILL OCCUR TO ENSURE A BUILD-UP OF SEDIMENT DOES NOT OCCUR AND VEGETATION IS

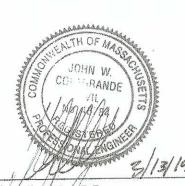
KEPT UNDER CONTROL. TOWN FIRE DEPARTMENT SHALL BE IMMEDIATELY CONTACTED TO RESPOND TO AND MANAGE THE CLEAN-UP OF ANY SPILL OF OIL OR HAZARDOUS MATERIALS AS RECOMMENDED BY MASSDEP. MASSDEP 24-HOUR SPILL REPORTING SHALL BE CONTACTED TO REPORT ANY SUCH SPILLS TOLL-FREE AT (888) 304-1133.

4. THE PROJECT SHALL CONFORM TO THE TOWN'S MS4 IDDE PROGRAM. TRI-COUNTY REGIONAL VOCATIONAL IS THE OWNER, AND SUN-EDISON IS THE



WHITMAN

7 PLEASANT HILL ROAD CRANBURY, NJ 08512 TEL: (732) 390-5858 FAX: (732) 390-9496



JOHN W. COLAGRANDE/JR./P.E. MASSACHUSETTS PROFESSIONAL ENGINEER LIC. NO. 48784

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	(0)	00) 020 0022
NO.	DATE:	REVISION DESCRIPTION
0	7/12/13	PRELIMINARY SUBMISSION
1	11/01/13	COMMENTS INCORPORATED
2	02/18/14	COMMENTS INCORPORATED
3	03/04/14	COMMENTS INCORPORATED
4.	3/12/14	FINAL SUBMISSION
qu <sub>i</sub> ntto sate		

1.3068 MW (DC) TOTAL 1.0 MW (AC) TOTAL GROUND MOUNTED PHOTOVOLTAIC SYSTEM SUN EDISON # MA-12-017 TRI-COUNTY REGIONAL VOCATIONAL SCHOOL OLD W CENTRAL ST. POLE 74-2

FRANKLIN, MA 02038 AS SHOWN 3/13/2014 | PROJECT No: 1302061 REVIEWED BY: C.R. DRAWN BY: C.A.

SESC NOTES AND DETAILS & DRAINAGE CALCULATIONS

DRAWING NO.

<u>SHEET NO.:</u>

DRAWING TITLE:

13 OF 13

SOIL TYPES BASED ON NATIONAL RESOURCE CONSERVATION SERVICE (NRCS)

308B Montauk fine sandy loam, 3 to 8 percent slopes 602 Urban land Q to 15 percent slopes

GENERAL SEQUENCE OF CONSTRUCTION

1. 3 DAYS . INSTALL TRACKING PADS AND SILT/CONSTRUCTION FENCE 2. CLEAR TREES 3. 1 WEEK 3. GRADE SITE AND INSTALL LANDSCAPING 4. CONSTRUCT ACCESS DRIVEWAY AND INSTALL PERMANENT PERIMETER FENCING 5. 7 WEEKS 5. CONSTRUCT SOLAR PANELS • INSTALL POSTS AND RACKS · EXCAVATE FOR UNDERGROUND WIRING CONDUIT AND INSTALL CONDUIT • CONSTRUCT CONCRETE PADS FOR ELECTRICAL EQUIPMENT • INSTALL PANELS AND WIRING · RUN WIRES FROM PANELS THROUGH CONDUITS · CONNECT ELECTRICAL COMPONENTS TOGETHER · CONNECT TO SWITCHGEAR AND GRID S. STABILIZE GROUND UNDER PANELS AND ANY LANDSCAPE AREAS THAT HAVE 6. 2 DAYS ESTIMATED START DATE: MAY 1, 2014

MUNICIPAL APPROVALS IARCH, 2014 BY THE TOWN OF 3-24-19

DURATION

ESTIMATED DURATION OF CONSTRUCTION: 12 WEEKS

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