

Norwich Upper Loveland Solar LLC

201 Upper Loveland Road
Norwich, Vermont



ISSUED FOR PERMIT REVIEW
NOT FOR CONSTRUCTION

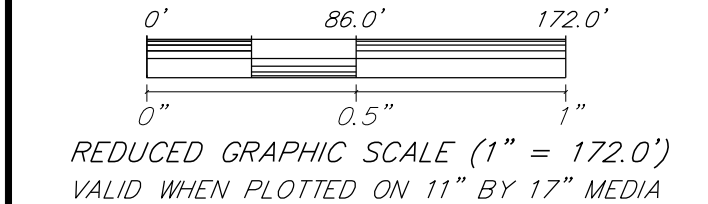
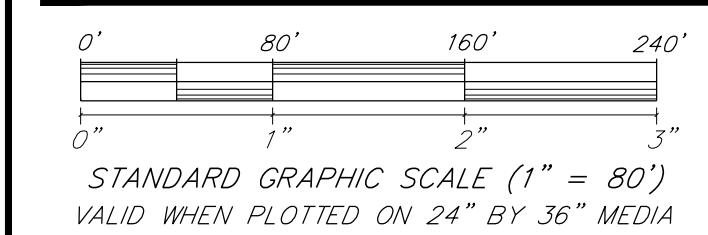
SOURCE DATA LEGEND

MAPPING SOURCE DATA USED FOR PLAN COMPILATION

Electrical Design:
Norwich Solar Technologies
15 Railroad Row
White River Junction, Vermont 05001

Civil Engineering:
Krebs and Lansing Consulting Engineers, Inc.
164 Main Street, Suite 201
Colchester, Vermont 05466

Environmental:
Arrowwood Environmental
950 Bert White Rd.
Huntington, Vermont 05462



Proposed Solar Array

DATE REV.	REVISIONS/COMMENTS	DATE

Drawing Title:

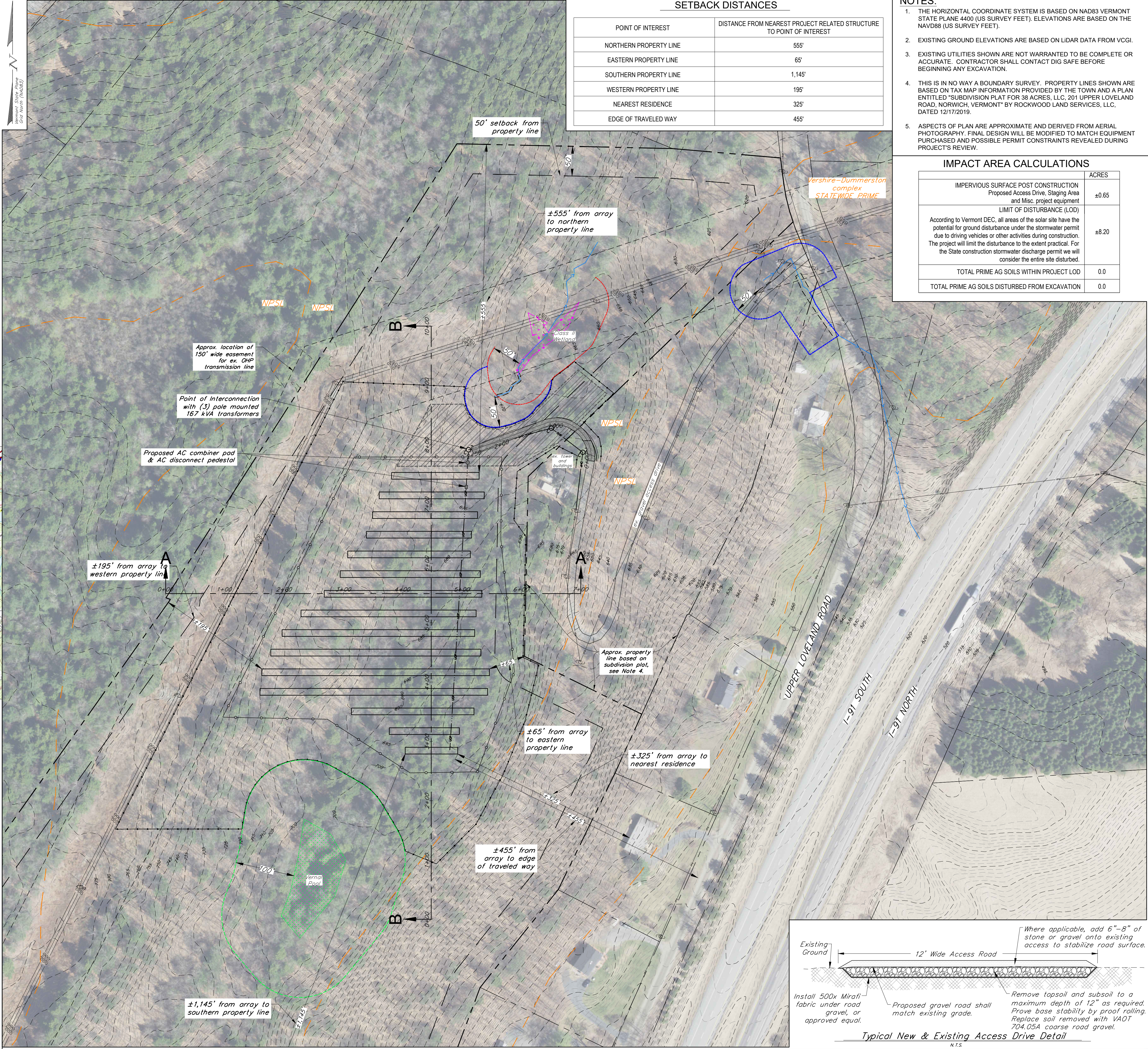
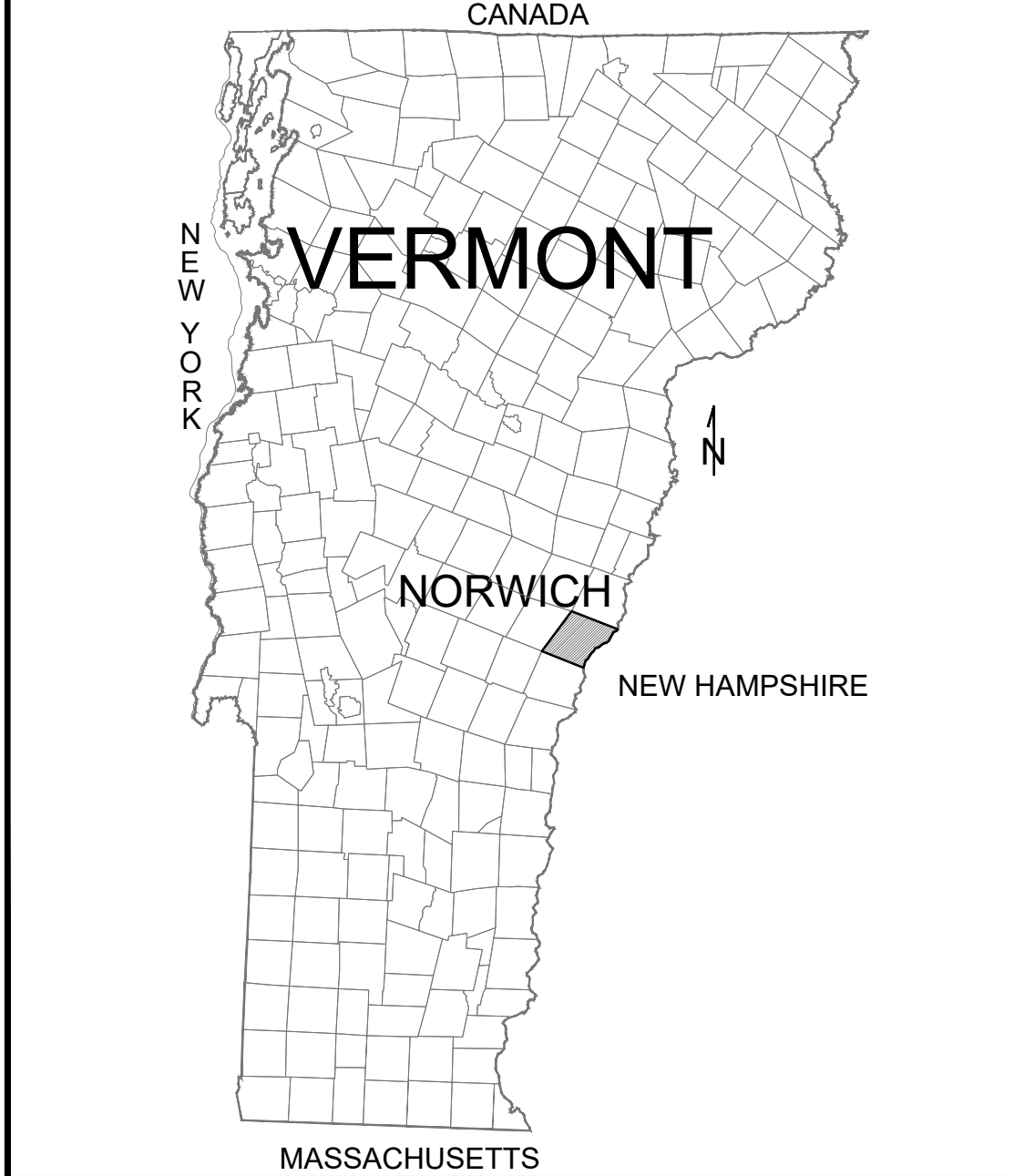
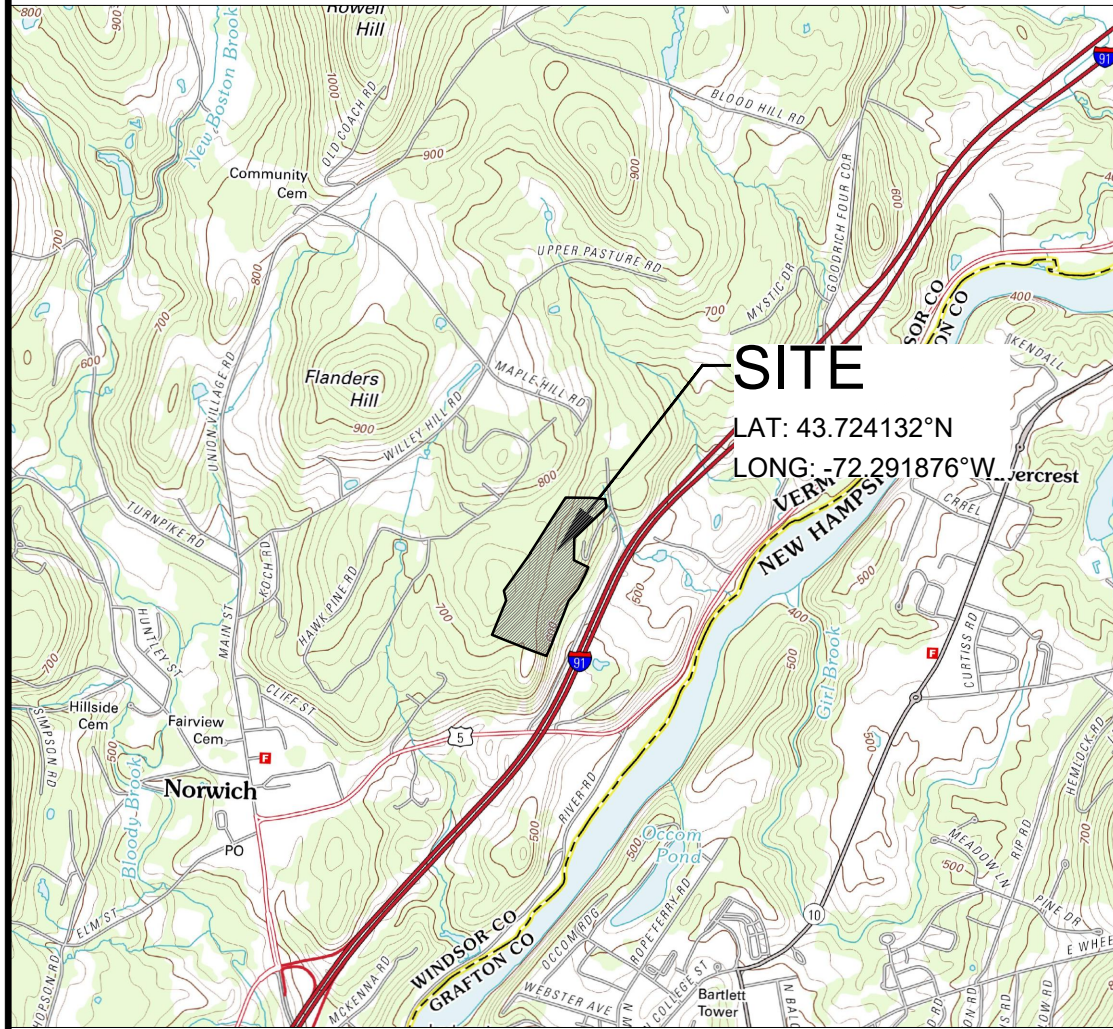
PRELIMINARY
SITE PLAN

DATE of Issue: 8/27/2021
Drawn by: JBC Checked by: JBC
Project No.: 21298 Scale: 1" = 80'
Drawing No.: Rev No.:

C-100

LEGEND:

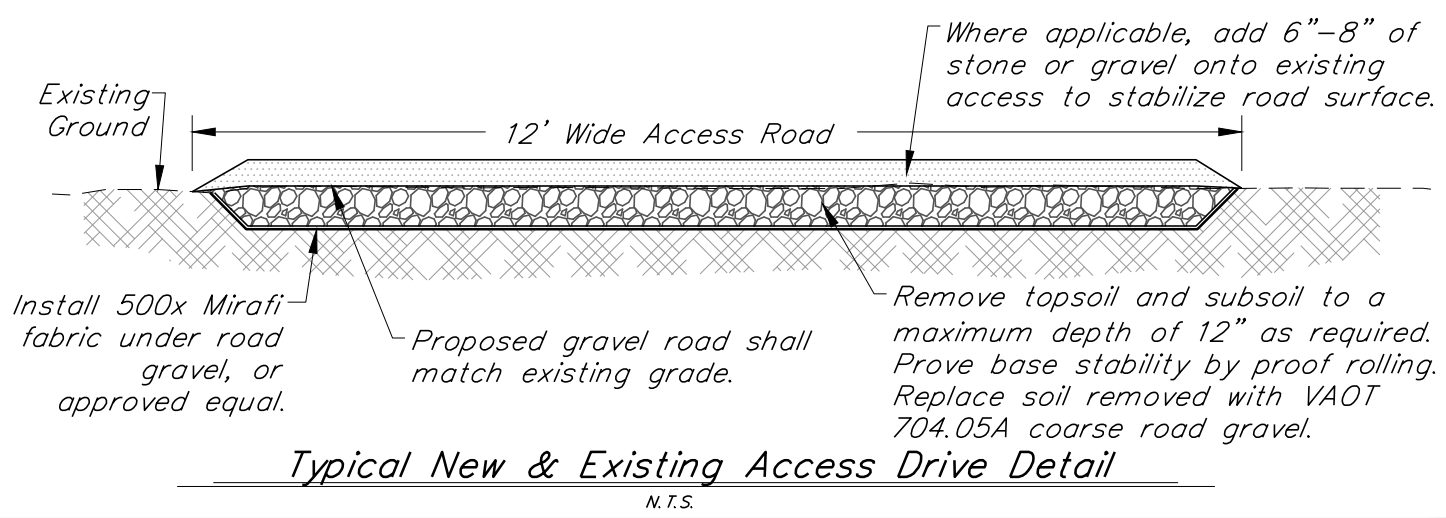
- EXISTING / PROPOSED POWER POLE
- EXISTING GRADE CONTOUR LINES (10 FOOT INTERVALS)
- EXISTING GRADE CONTOUR LINES (2 FOOT INTERVALS)
- EXISTING OVERHEAD POWER LINES
- APPROXIMATE PROPERTY LINES
- APPROXIMATE PROJECT PROPERTY LINES
- SETBACKS TO SOLAR PANEL RACKING
- WETLANDS (LOCATED BY AE)
- WETLAND BUFFER
- VERNAL POOL (LOCATED BY AE)
- VERNAL POOL BUFFER
- MAPPED SOIL BOUNDARY (VCGI)
- STREAM (LOCATED BY AE)
- STREAM TOP OF BANK (LOCATED BY AE)
- RIPARIAN BUFFER
- PROPOSED 12' GRAVEL ACCESS ROAD
- PROPOSED UNDERGROUND POWER
- PROPOSED OVERHEAD POWER
- PROPOSED PERIMETER FENCE
- PROPOSED FIXED SOLAR PANEL RACKING
- PROPOSED STAGING AREA
- PROPOSED CLEARING AND LIMIT OF DISTURBANCE (LOD)



SETBACK DISTANCES	
POINT OF INTEREST	DISTANCE FROM NEAREST PROJECT RELATED STRUCTURE TO POINT OF INTEREST
NORTHERN PROPERTY LINE	555'
EASTERN PROPERTY LINE	65'
SOUTHERN PROPERTY LINE	1,145'
WESTERN PROPERTY LINE	195'
NEAREST RESIDENCE	325'
EDGE OF TRAVELED WAY	455'

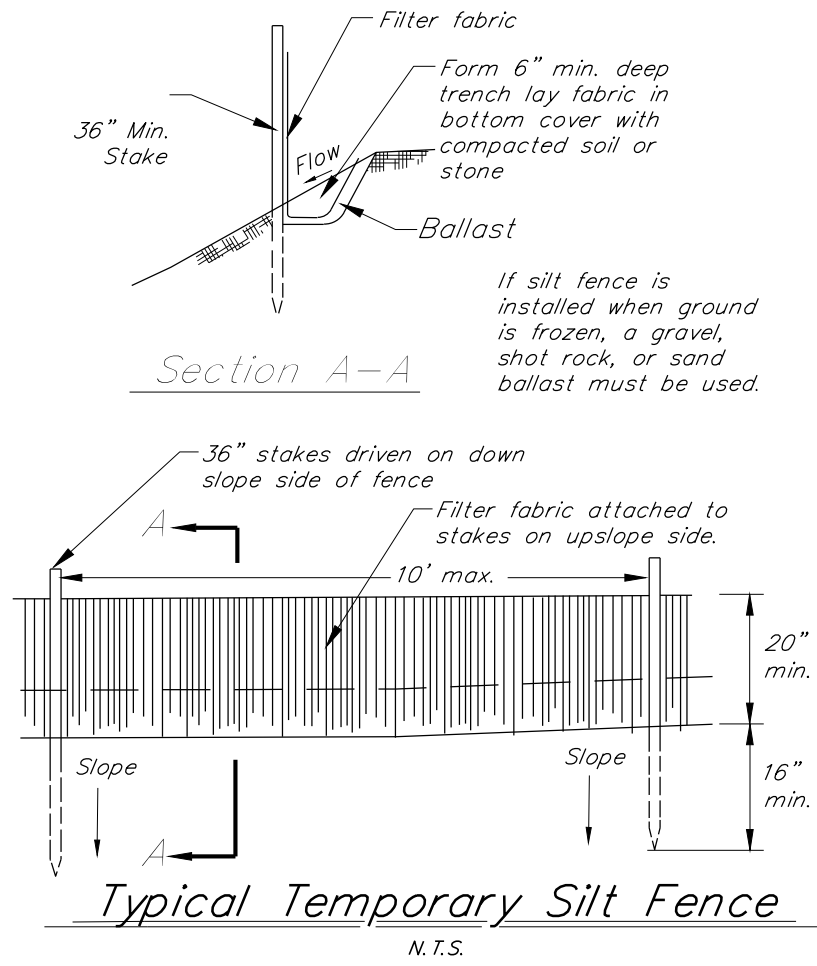
- NOTES:
- THE HORIZONTAL COORDINATE SYSTEM IS BASED ON NAD83 VERMONT STATE PLANE 4400 (US SURVEY FEET). ELEVATIONS ARE BASED ON THE NAVD88 (US SURVEY FEET).
 - EXISTING GROUND ELEVATIONS ARE BASED ON LIDAR DATA FROM VCGI.
 - EXISTING UTILITIES SHOWN ARE NOT WARRANTED TO BE COMPLETE OR ACCURATE. CONTRACTOR SHALL CONTACT DIG SAFE BEFORE BEGINNING ANY EXCAVATION.
 - THIS IS IN NO WAY A BOUNDARY SURVEY. PROPERTY LINES SHOWN ARE BASED ON TAX MAP INFORMATION PROVIDED BY THE TOWN AND A PLAN ENTITLED "SUBDIVISION PLAT FOR 38 ACRES, LLC, 201 UPPER LOVELAND ROAD, NORWICH, VERMONT" BY ROCKWOOD LAND SERVICES, LLC, DATED 12/17/2019.
 - ASPECTS OF PLAN ARE APPROXIMATE AND DERIVED FROM AERIAL PHOTOGRAPHY. FINAL DESIGN WILL BE MODIFIED TO MATCH EQUIPMENT PURCHASED AND POSSIBLE PERMIT CONSTRAINTS REVEALED DURING PROJECT'S REVIEW.

IMPACT AREA CALCULATIONS	
	ACRES
IMPERVIOUS SURFACE POST CONSTRUCTION Proposed Access Drive, Staging Area and Misc. project equipment LIMIT OF DISTURBANCE (LOD) According to Vermont DEC, all areas of the solar site have the potential for ground disturbance under the stormwater permit due to driving vehicles or other activities during construction. The project will limit the disturbance to the extent practical. For the State construction stormwater discharge permit we will consider the entire site disturbed.	±0.65
TOTAL PRIME AG SOILS WITHIN PROJECT LOD	0.0
TOTAL PRIME AG SOILS DISTURBED FROM EXCAVATION	0.0



NOTES:

1. Acceptable EPSC Measure details are provided above.
2. At a minimum, EPSC measures meet VT DEC Standards and Specifications for Erosion Prevention and Sediment Control or previously approved interchangeable practices.
3. Perimeter controls shall be utilized in small areas ≤ 1 acre. In areas > 1 acre, temporary sediment traps or temporary sediment basins are to be utilized.
4. Perimeter controls shall be installed on downslope side of planned earth disturbance.
5. Perimeter controls shall be installed prior to any earth disturbing activities within upslope contributing area.
6. Silt fence shall not be used as construction demarcation.



CONSTRUCTION STORMWATER DISCHARGE PERMIT INFORMATION

1. This Project proposes greater than 1 acre of soil disturbance on site. The Project will apply for a Construction General Permit 3-9020.
2. The proposed Project has been scored using the State of Vermont Appendix-A Risk Evaluation. The Project is scored "Low Risk" based on the evaluations criteria.
3. The maximum area of earth disturbance at any one time shall not exceed 5 acres.
4. All areas of earth disturbance associated with this project must be stabilized within 14-days of initial disturbance. After this initial 14-day period, all earth disturbance areas associated must be stabilized on a daily basis, with the following exceptions:
a. Stabilization is not required if work is to continue within the area within the next 24 hours and there is no precipitation forecast for the next 24 hours.
b. Stabilization is not required if the work is occurring in a self-contained excavation (i.e., no outlet for stormwater) with a depth of 2 feet or greater (e.g., underground line installation).
5. Project does not propose winter construction.
6. All temporary EPSC measures shall be removed within 30 days after final site stabilization or after the temporary EPSC measures are no longer needed, unless otherwise authorized and approved in writing by the Owner.
7. Soil stabilization shall be achieved by seed and mulch, hydroseeding, with mulch tackifier, sod, stone, and/or rolled erosion control products (e.g., erosion control blanket). Mulch shall be comprised of straw, hay, compost, woodchips, wood stump grindings, and/or erosion control mix.
8. Appropriate seed mix shall be applied to designated areas per this EPSC Plan and seed specifications.

EPSC GENERAL NOTES

1. Erosion prevention and sediment control (EPSC) practices shall be implemented in all areas where there is an increased risk of erosion, and where there is potential for discharge of stormwater runoff (either direct or indirect) to a water body.
2. EPSC measures shall be installed prior to any earth disturbing activities within a given drainage area with the exception of land disturbance that may result from accessing the area(s) with equipment in which EPSC measures are to be installed. This exception includes land disturbance that may result from access of equipment that is needed for: logging (See note #5), exploration and/or EPSC measure installation phases of the project. Temporary sediment basins, temporary sediment traps, perimeter dikes, temporary sediment barriers, and other temporary measures intended to trap sediment shall be constructed as a first step in any land disturbing activity and shall be made functional before upslope land disturbance takes place with the exception of those activities stated above. Earth disturbance includes stumping and grubbing of cleared areas.
3. Where applicable, EPSC measures shall be installed pursuant to the construction phase stormwater discharge permit for the project, this EPSC Plan, the Vermont Standards and Specifications for Erosion Prevention and Sediment Control (2020), Vermont Erosion Prevention and Sediment Control Field Guide (2020), and any other relevant project permits.
4. Where applicable, all proposed changes shall be approved by the On-Site Plan Coordinator (OSPC) or his/her designee prior to implementation.
5. Permission must be granted by VT DEC prior to use of any support activities occurring outside of the approved project boundaries.
6. All parties associated with construction activities who meet either of the following two criteria of "Principal Operator" must obtain coverage under the construction stormwater discharge permit for the project prior to commencement of construction activities by that operator:
a. The party has operational control over construction plans and specification, including but not limited to the ability to make modifications to those plans and specifications; or
b. The party has continuous day-to-day operational control of those activities at the project that are necessary to ensure compliance with an EPSC Plan for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the EPSC Plan or comply with other permit conditions).

Silt fence spacing chart	
Slope	silt fence spacing
5% to 10%	50 ft. or less
10% to 20%	25 ft. or less
> 20%	15 ft. or less

EPSC CONSTRUCTION NOTES

1. Existing vegetation shall be protected and maintained to the extent practicable.
2. A vegetated buffer shall be maintained for water bodies where feasible (e.g., wetlands and streams).
3. To the extent practicable, surface flow shall be diverted away from exposed soils via diversion berms, earth dikes, perimeter dikes/swales, temporary swales, water bars, and/or check dams.
4. Resource areas (e.g., wetlands, streams, RTE plant species) shall be flagged prior to any construction related activities occurring within close proximity to those areas.
5. Effluent from dewatering operations shall be filtered or passed through an approved sediment trapping device, or both, and discharged in a manner that does not violate water quality standards or contribute to erosion. Dewatering details shall be reviewed and approved by OSPC prior to use.
6. Concentrated runoff shall not flow down steep slopes unless contained within an adequate temporary or permanent channel (see details), flume, or slope drain structure.
7. Underground utility lines shall be installed in accordance with the following standards in addition to other applicable criteria:
a. No more than 500 linear feet of trench may be opened at one time.
b. Excavated material shall be placed on the uphill side of trenches, where feasible, but not in resource areas.
8. Where feasible, all sediment removed from sediment control practices as part of maintenance shall be disposed of in an area that is at least one of the following, with immediate stabilization following disposal of material:
a. Less than 5:1 slope
b. At least 100 feet from any downslope water body or conveyance to a water body, including a ditch
c. Vegetated
9. Disturbed areas bordering or draining to existing roads shall have an appropriate sediment barrier (e.g., silt fence) spanning the edge of the disturbance to prevent washing of sediment onto roadways or into road ditches.
10. In advance of predicted rainfall or snowmelt, all EPSC measures that are located in active areas of earth disturbance shall be inspected and repaired, as needed. If necessary, this shall include temporary stabilization of all disturbed soils on the site in advance of the anticipated rain period.
11. Dust control shall be handled via water application to roadways and other areas where dust may be generated.

Guide to Mulch Materials, Rates, and Uses						
	Quality Standards	Per 1000 sq. ft.	Per Acre	Depth of Application	Remarks	
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs	10-20 tons	2 - 7"	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.	
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs	2,000 lbs.	-	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.	
Gravel, Crushed Stone or Slog	Washed; Size 2B or 3A - 1/2"	9 cu. yds.	405 cu. yds.	3"	Excellent mulch for short slopes and around plants and ornaments. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.	
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs	2-3 bales	2 tons (100-120 bales)	Cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environmental for germinating seeds.
Compost	Up to 3" pieces, moderately to highly stable	3-9 cu. yds.	134-402 cu. yds.	1 - 3"	Coarser textured mulches may be more effective in reducing weed growth and wind erosion.	
Erosion Control Mix	Well-graded mixture of particle sizes. Organic content between 80-100% dry weight. Particle size shall pass 6" screen (100%)	* Slopes 3:(H:V) or flatter = 2 inch depth plus additional 1/2 inch depth per 20 ft. of slope up to 100 ft. ** Slopes between 3:(H:V) and 2:(H:V) = 4 inch depth plus additional 1/2 inch per 20 ft. of slope up to 100 ft. *** Slopes steeper than 2:(H:V) applicability to specific site and mulch depth to be reviewed and approved prior to use by OSPC or EPSC Specialist				

NOTES:

1. Acceptable EPSC Measure details are provided below.
2. At a minimum, EPSC measures meet VT DEC Standards and Specifications for Erosion Prevention and Sediment Control or previously approved interchangeable practices.
3. Limits of disturbance (or "construction demarcation") shall be installed prior to any earth disturbing activities.
4. Barrier Tape/Rape: for use where proposed disturbance borders non-wooded, vegetated areas more than 100 ft from the nearest water resource (stream, brook, lake, pond, wetland, etc.). Barrier tape is high visibility fiber-glass tape, minimum 3" in width commonly used in ski areas for demarcating closed areas. Barrier tape and rape should be attached to stakes, at a minimum height of 4 ft from the ground.
Orange polyester mesh webbing by World Cup Supply or approved equal (3" wide min.)
Fasten fence to stake
Wood stakes driven on outside of fence
To be installed at the limits of the construction area. See Plans.

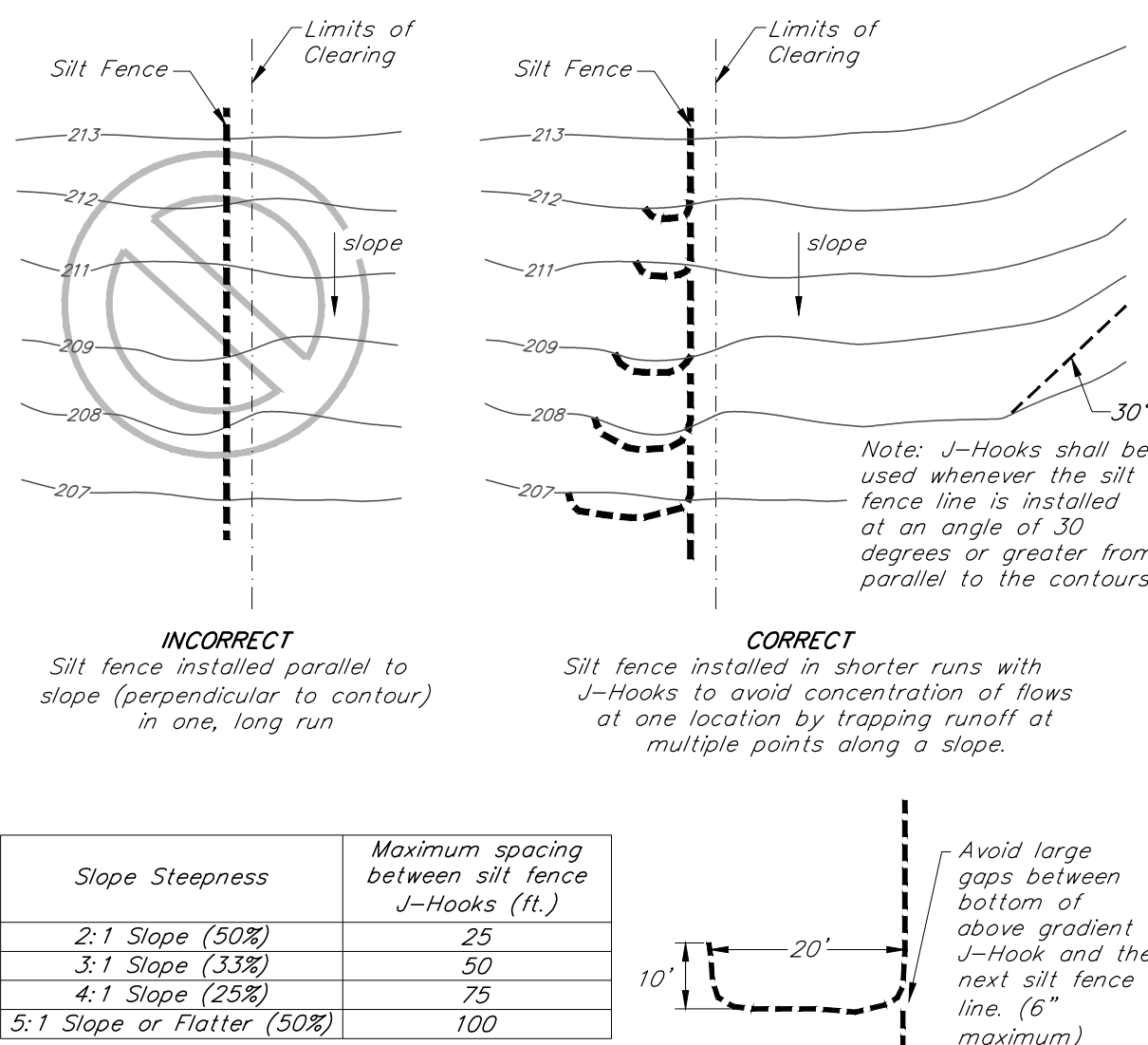
NOTES:

1. Minimum 1 to 2 rows of mesh barrier tape to be installed along construction perimeter.
2. Each row of barrier tape to be 3" wide minimum.
3. Barrier tape to be orange.
4. Secure barrier tape to stakes or existing tree trunks with bottom row at 4' distance from ground surface (minimum).
5. Maintain and replace as needed. Remove at completion of project per OSPC.
6. In event the OSPC determines barrier tape is not sufficient, replace with orange construction fence or snow fence.

Typical Construction Limit Barrier

NOTES:

1. Proper installation of J-Hooks provides silt fence the ability to temporarily pond runoff, allowing time for sediments to settle.
2. Long runs of silt fence between J-Hooks should be avoided refer to adjacent table for proper spacing of J-Hooks.
3. J-Hooks should be built along contour in a "smile" shape with a minimum width of 20 feet and minimum depth of 10 feet.
4. Along a narrow right of way, narrower J-Hooks can be used with a higher spacing frequency.



INCORRECT

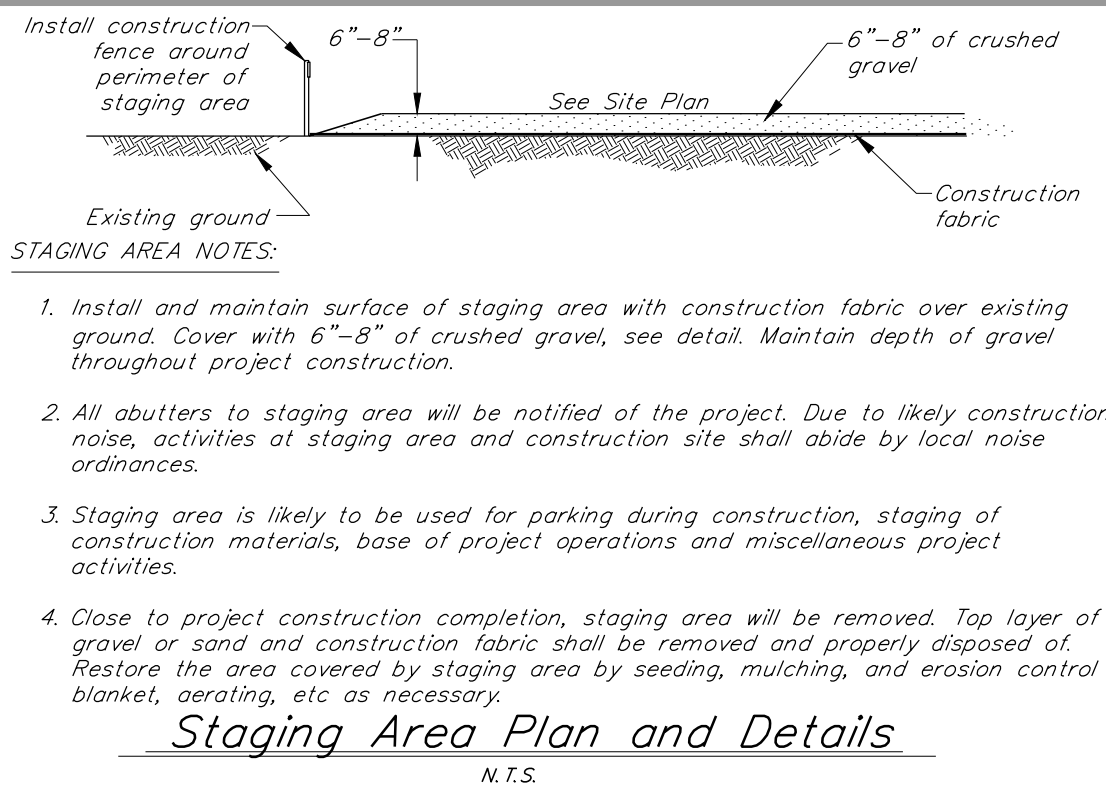
Silt fence installed parallel to slope (perpendicular to contour) in one, long run

CORRECT

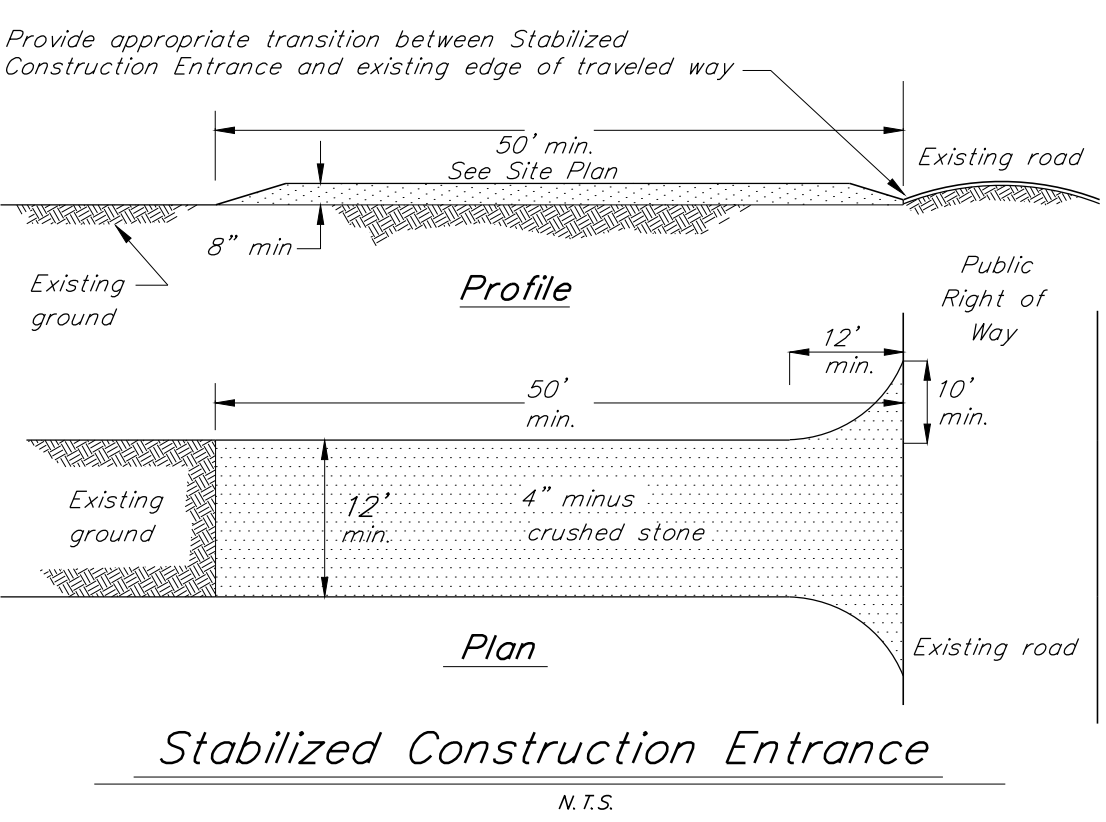
Silt fence installed in shorter runs with J-Hooks to avoid concentration of flows at one location by trapping runoff at multiple points along a slope.

Slope Steepness	Maximum spacing between silt fence J-Hooks (ft.)
2:1 Slope (50%)	25
3:1 Slope (33%)	50
4:1 Slope (25%)	75
5:1 Slope or Flatter (50%)	100

Typical Silt Fence "J-Hook" Construction



Staging Area Plan and Details



Stabilized Construction Entrance

Permanent Seed Mix shall be used as early as practicable between 5/15 and 9/15 and shall meet the following criteria:

Seed	% Weight
Red Fescue	50%
Sheep Fescue	25%
Red Top	5%
White Clover	10%
Annual Rye	10%

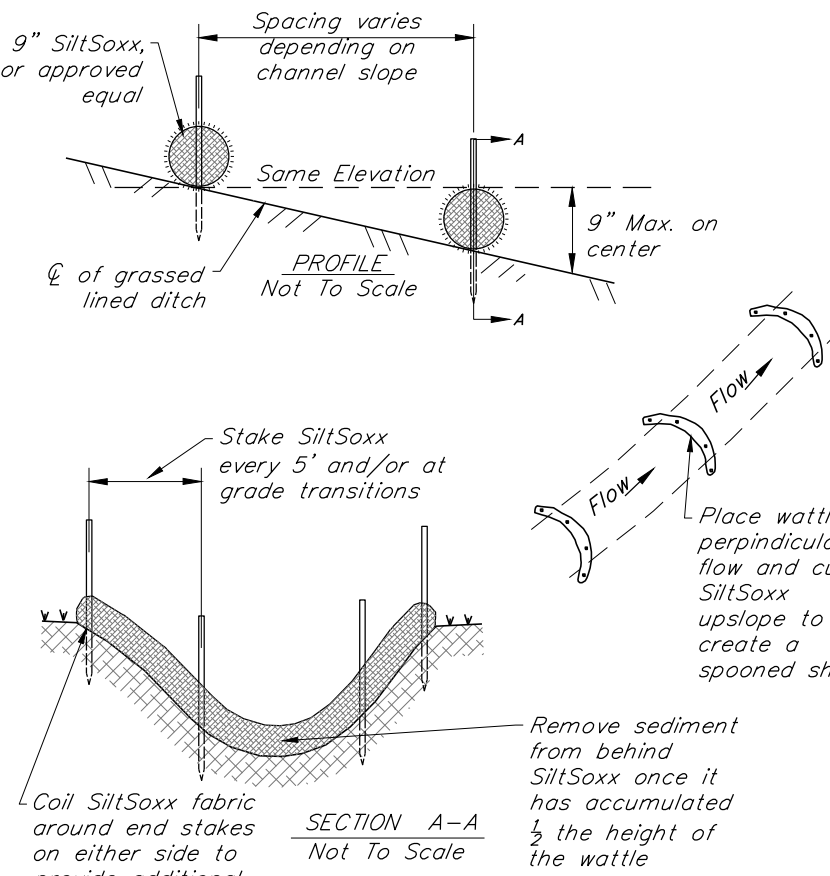
Temporary Seed Mix shall be used between 9/16 and 5/14 and shall meet the following criteria:

Seed	% Weight	% Germination
Winter Rye	80% Minimum	85 Min.
Red Fescue (Creeping)	4 Min.	90 Min.
Perennial Rye Grass	3 Min.	90 Min.
Red Clover	0.5 Max.	
Other Crap Grass	0.5 Max.	
Noxious Weed Seed	0.5 Max.	
Inert Matter	1.0 Max.	

Seeding Specifications

Notes:

1. Contractor shall stabilized construction entrance as required to prevent tracking of sediment off-site.
2. Contractor to use Mirafi 500x under stone for temporary construction roads.
3. Crushed stone shall be added or replaced when 80% of the voids are filled with sediment.
4. Stone size shall be 1-4".
5. All surface water flowing or diverted toward construction entrance shall be piped beneath entrance. If piping is impractical, a mountable berm with 5:1 slopes is allowed.



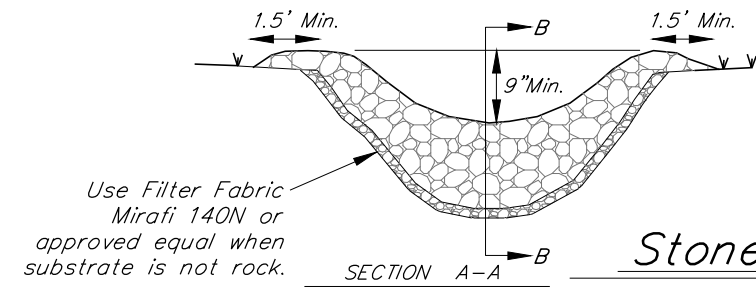
NOTE:

1. Contractor shall be responsible for the installation, maintenance, and removal of SiltSox in all locations shown on the plans. SiltSox may be left in place if the contractor seeds and mulches wattle for growth post construction.
2. Maintenance shall be performed as needed and additional SiltSox will be added when sediment reaches half of product height.
3. When installing lengths of SiltSox, lengths will overlap by minimum 2' when transitioning to a new length of wattle.
4. Contractor shall refer to all manufactures specifications and details.
5. SiltSox can only be used in a grass lined swale, may not be used in stone lined swales.
6. SiltSox check dam can only be used in channels with slopes less than 5%.
7. SiltSox is a specific manufacturer, other manufacturers with equal products may be used if approved by Engineer.

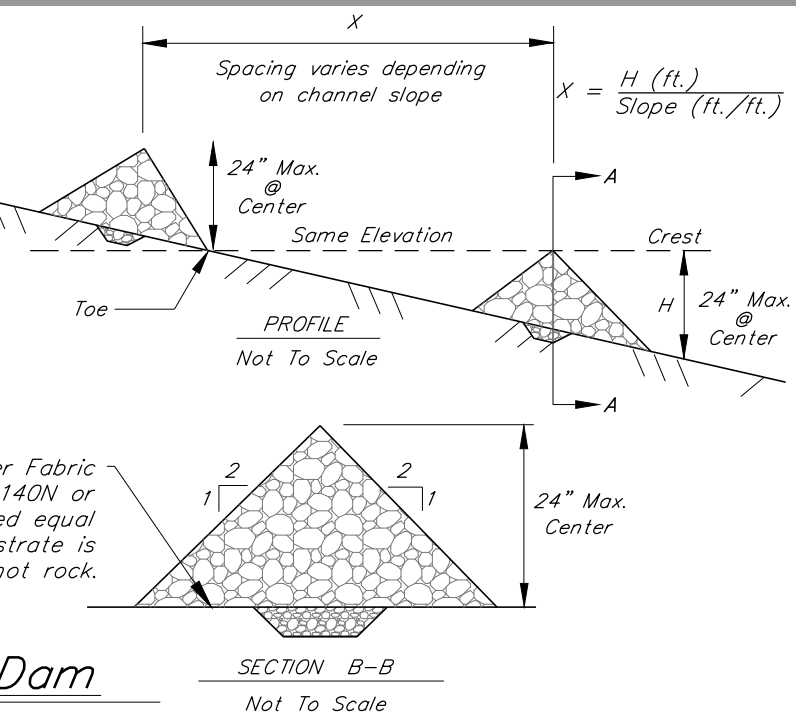
SiltSox Check Dam

CONSTRUCTION SPECIFICATIONS

1. Set spacing of check dams to assume that the elevations of the crest of the downstream dam is at the same elevation of the toe of the upstream dam.
2. Extend the stone a minimum of 1.5 feet beyond the ditch banks to prevent cutting around the dam.
3. Protect the channel downstream of the lowest check dam from scour and erosion with stone or erosion control matting as appropriate.
4. Ensure that channel appurtenances such as culvert entrances below check dams are not subject to damage or blockage from displaced stones.
5. Stone Check Dams may be left in place or removed after establishment of permanent vegetative cover along swales adjacent to Stone Check Dams and at the direction of the Owner.



Stone Check Dam



SiltSox or Constructed Water Bar Detail

5" to 12" diameter SiltSox, or approved equal, may be used in locations shown on plans or as an alternate to silt fence only with prior approval from Engineer. Size of SiltSox will be based on application, check with Engineer for size.

NOTE:

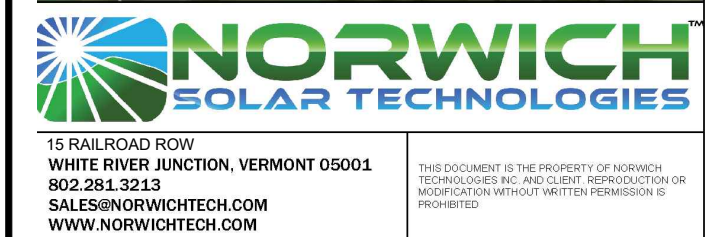
1. Contractor shall be responsible for the installation, maintenance, and removal of SiltSox in all locations shown on the plans. SiltSox may be left in place if the contractor seeds and mulches wattle for growth post construction.
2. Maintenance shall be performed as needed and additional wattles will be added when sediment reaches half of product height.
3. When installing lengths of SiltSox, lengths will overlap by minimum 18" when transitioning to a new length of SiltSox.
4. Contractor shall refer to all manufactures specifications and details.
5. SiltSox is a specific manufacturer, other manufacturers with equal products may be used if approved by Engineer.
6. SiltSox can be used as a silt fence alternative.

Typical SiltSox Sediment Control

N.T.S.

Norwich Upper Loveland Solar LLC

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Norwich, Vermont



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Proposed Solar Array

SET REV.	REVISIONS/COMMENTS	DATE

Drawing Title:

EROSION PREVENTION AND SEDIMENT CONTROL DETAILS

DATE of Issue: 8/27/2021

Drawn by: JBC Checked by: JBC

Project No.: 21298

Scale: NTS

Drawing No.:

Rev No.: