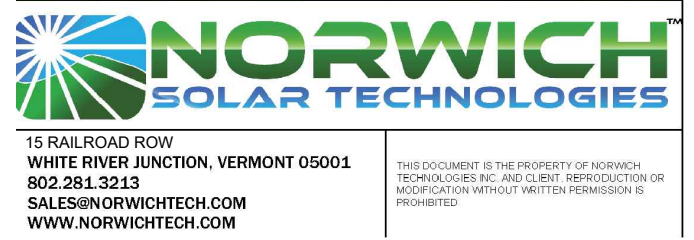


# Norwich Turnpike Solar, LLC

Turnpike Road  
Norwich, Vermont



164 Main Street, Suite 201  
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**ISSUED FOR PERMIT REVIEW  
NOT FOR CONSTRUCTION**

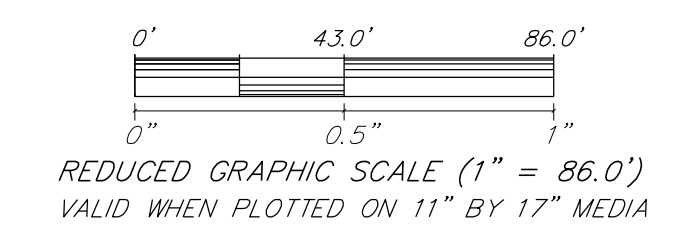
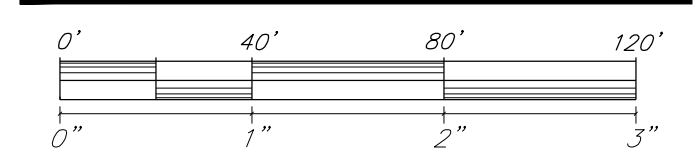
**SOURCE DATA LEGEND**

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 05446

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



## Proposed Solar Array

SET REV.	REVISIONS/COMMENTS	DATE

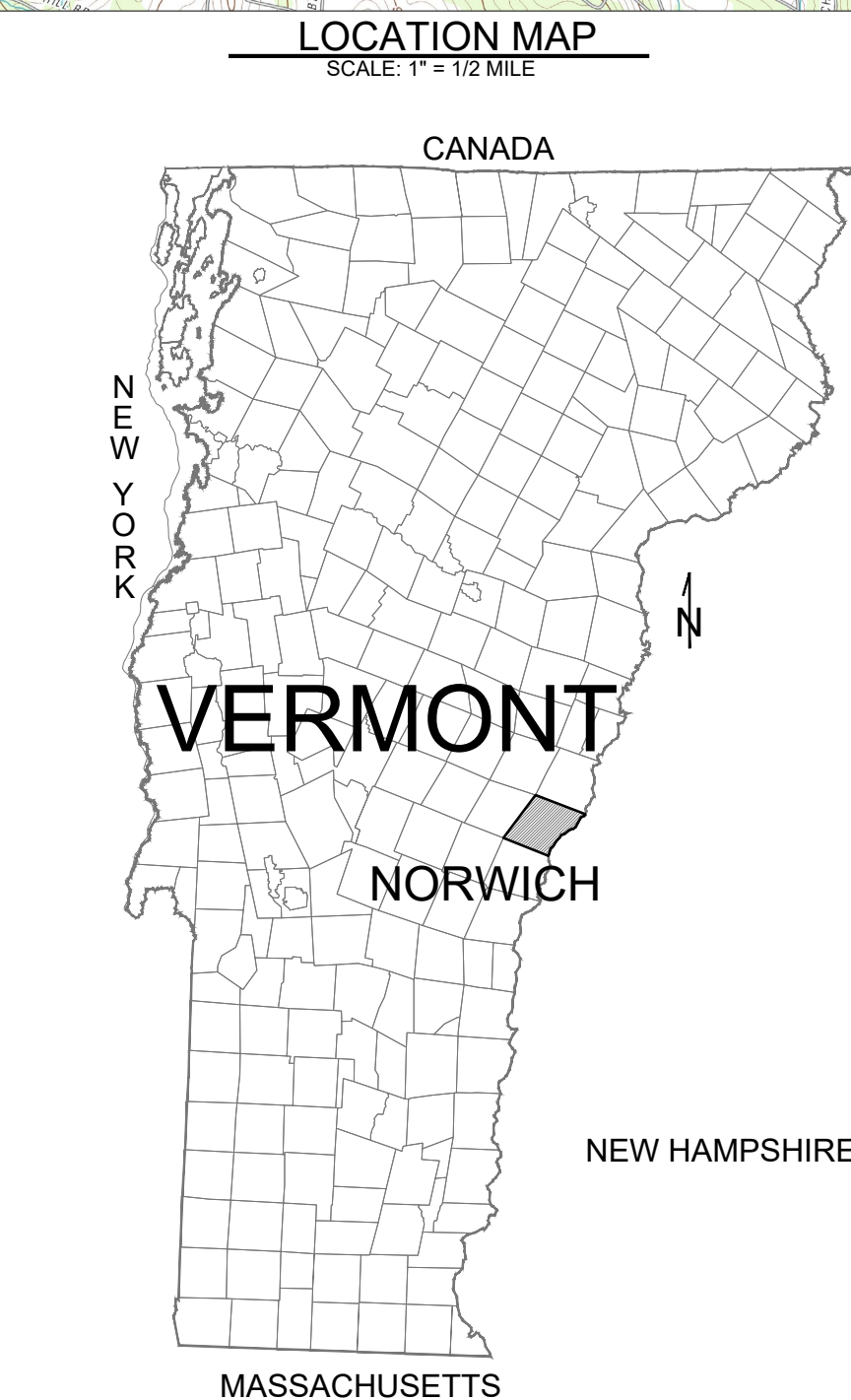
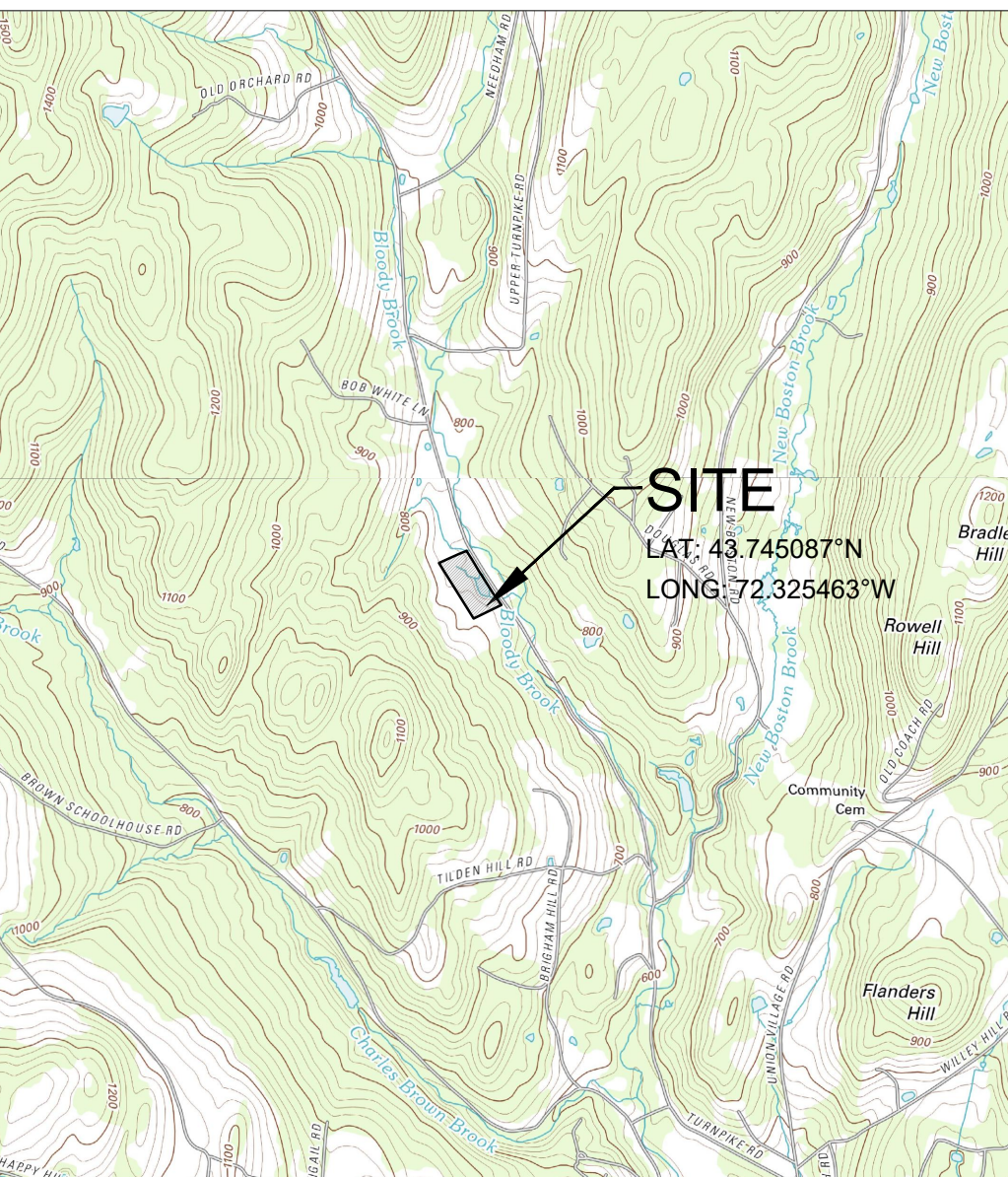
Drawing Title:  
**PRELIMINARY  
SITE PLAN**

DATE of Issue: 5/20/2020  
Drawn by: JBC Checked by: GTD  
Project No.: 20158 Scale: 1" = 40'  
Drawing No.: Rev No.:

**C-100**

**LEGEND:**

- EXISTING POWER POLE
- EXISTING OVERHEAD POWER LINES
- EXISTING GRADE CONTOUR LINES (5 FOOT INTERVALS)
- EXISTING GRADE CONTOUR LINES (1 FOOT INTERVALS)
- APPROXIMATE PROPERTY LINES
- APPROXIMATE PROJECT PROPERTY LINES
- SETBACKS TO SOLAR PANEL RACKING
- MAPPED SOIL BOUNDARY (VCGI)
- STREAM (LOCATED BY AE)
- CLASS II WETLANDS (LOCATED BY AE)
- CLASS II WETLAND BUFFER
- CLASS III WETLANDS (LOCATED BY AE)
- PAS STORAGE AREA
- PROPOSED UNDERGROUND POWER
- PROPOSED FIXED SOLAR PANEL RACKING
- PROPOSED STAGING AREA
- PROPOSED LIMIT OF DISTURBANCE (LOD)
- PROPOSED 12' GRAVEL ACCESS ROAD
- FINISH GRADE CONTOUR LINES (5 FOOT INTERVALS)
- FINISH GRADE CONTOUR LINES (1 FOOT INTERVALS)



**SETBACK DISTANCES**

POINT OF INTEREST	DISTANCE FROM NEAREST PROJECT RELATED STRUCTURE TO POINT OF INTEREST
NORTHERN PROPERTY LINE	710'
EASTERN PROPERTY LINE	97'
SOUTHERN PROPERTY LINE	27'
WESTERN PROPERTY LINE	82'
NEAREST RESIDENCE	219'
EDGE OF TRAVELED WAY	112'

**NOTES:**

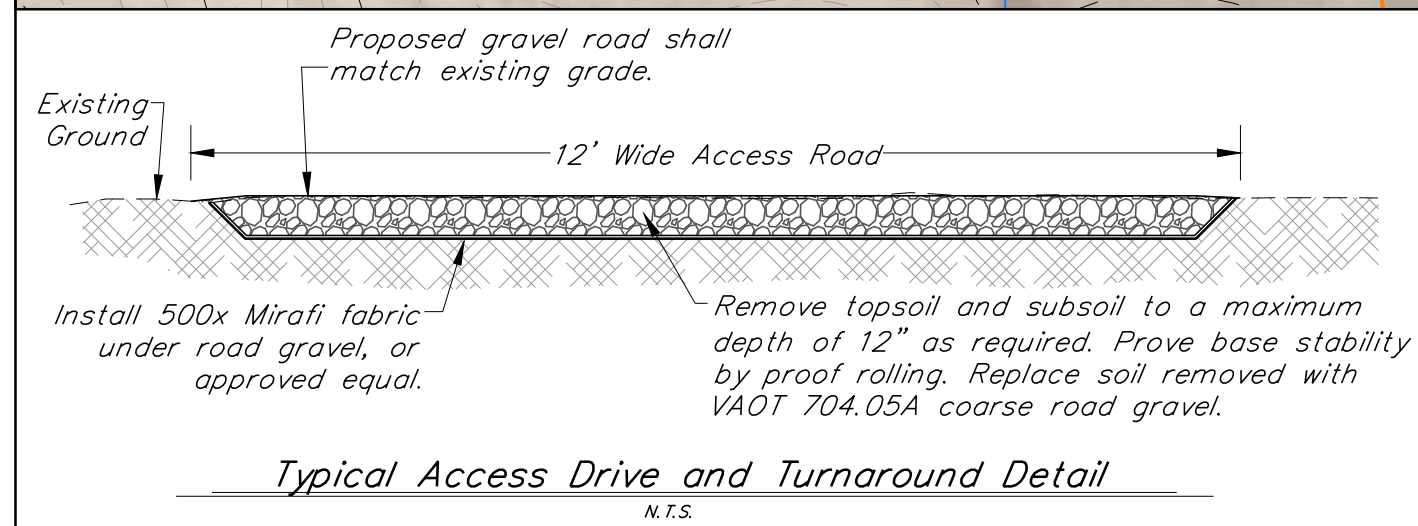
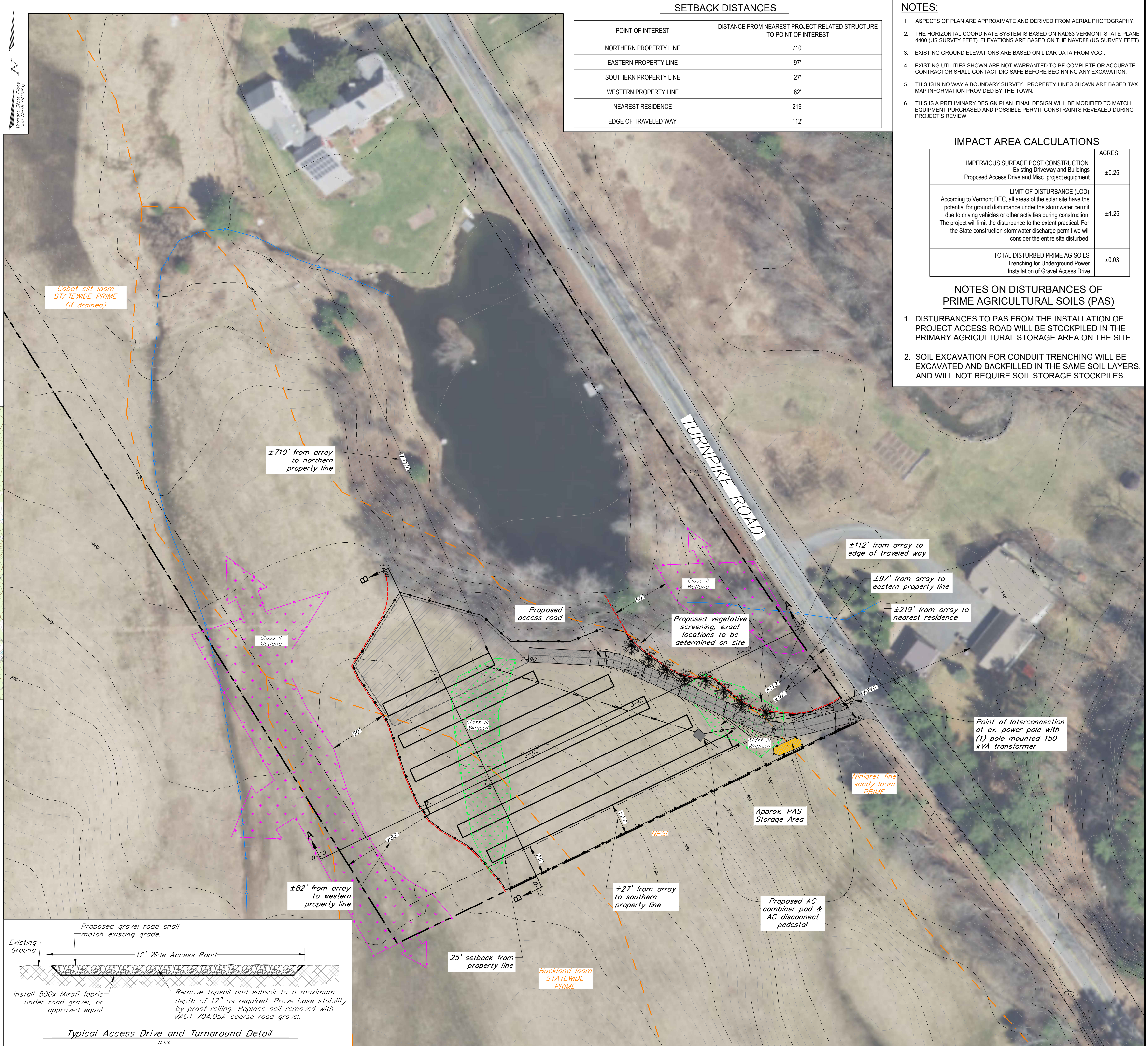
- ASPECTS OF PLAN ARE APPROXIMATE AND DERIVED FROM AERIAL PHOTOGRAPHY.
- THE HORIZONTAL COORDINATE SYSTEM IS BASED ON NAD83 VERMONT STATE PLANE 4400 (US SURVEY FEET). ELEVATIONS ARE BASED ON THE NAVD88 (US SURVEY FEET).
- EXISTING GROUND ELEVATIONS ARE BASED ON LIDAR DATA FROM VCGI.
- EXISTING UTILITIES 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 TAX MAP INFORMATION PROVIDED BY THE TOWN.
- THIS IS A PRELIMINARY DESIGN PLAN. FINAL DESIGN WILL BE MODIFIED TO MATCH EQUIPMENT PURCHASED AND POSSIBLE PERMIT CONSTRAINTS REVEALED DURING PROJECT'S REVIEW.

**IMPACT AREA CALCULATIONS**

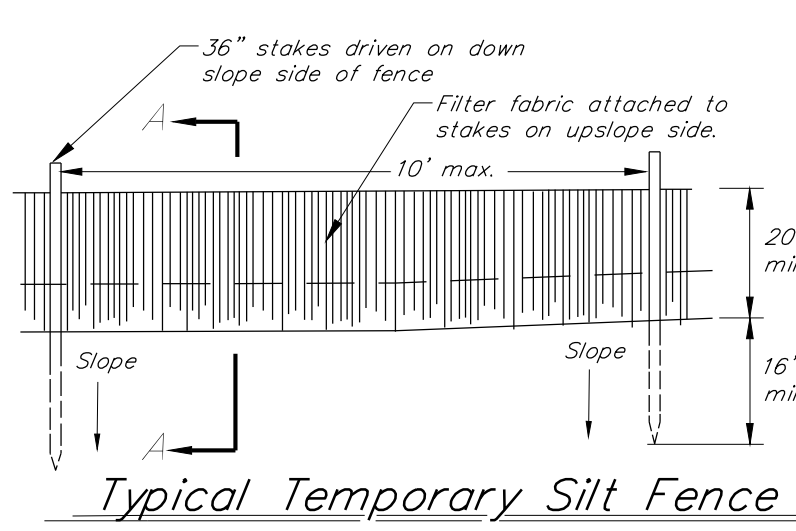
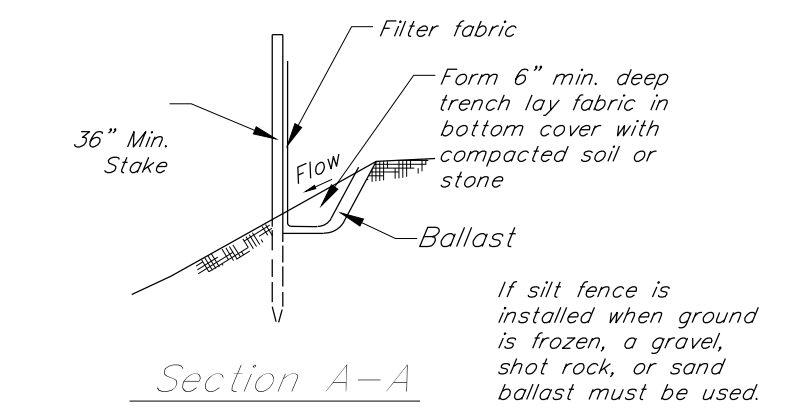
	ACRES
IMPERVIOUS SURFACE POST CONSTRUCTION Existing Driveway and Buildings Proposed Access Drive and Misc. project equipment	±0.25
LIMIT OF DISTURBANCE (LOD) According to Vermont DEC, all areas of the solar site have the potential for ground disturbance under the stormwater permit due to driving vehicles 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.	±1.25
TOTAL DISTURBED PRIME AG SOILS Trenching for Underground Power Installation of Gravel Access Drive	±0.03

**NOTES ON DISTURBANCES OF PRIME AGRICULTURAL SOILS (PAS)**

- DISTURBANCES TO PAS FROM THE INSTALLATION OF PROJECT ACCESS ROAD WILL BE STOCKPILED IN THE PRIMARY AGRICULTURAL STORAGE AREA ON THE SITE.
- SOIL EXCAVATION FOR CONDUIT TRENCHING WILL BE EXCAVATED AND BACKFILLED IN THE SAME SOIL LAYERS, AND WILL NOT REQUIRE SOIL STORAGE STOCKPILES.



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



**CONSTRUCTION STORMWATER DISCHARGE PERMIT INFORMATION**

- This Project proposes greater than 1 acre of soil disturbance on site. The Project will apply for a Construction General Permit 3-9020.
- 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.
- The maximum area of earth disturbance at any one time shall not exceed 2 acres.
- 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:  
i. 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.  
ii. 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).
- Project does not propose winter construction.
- 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.
- Soil stabilization shall be achieved by seed and mulch, hydroseeding, with mulch tackifier, soil, 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.
- Appropriate seed mix shall be applied to designated areas per this EPSC Plan and seed specifications.

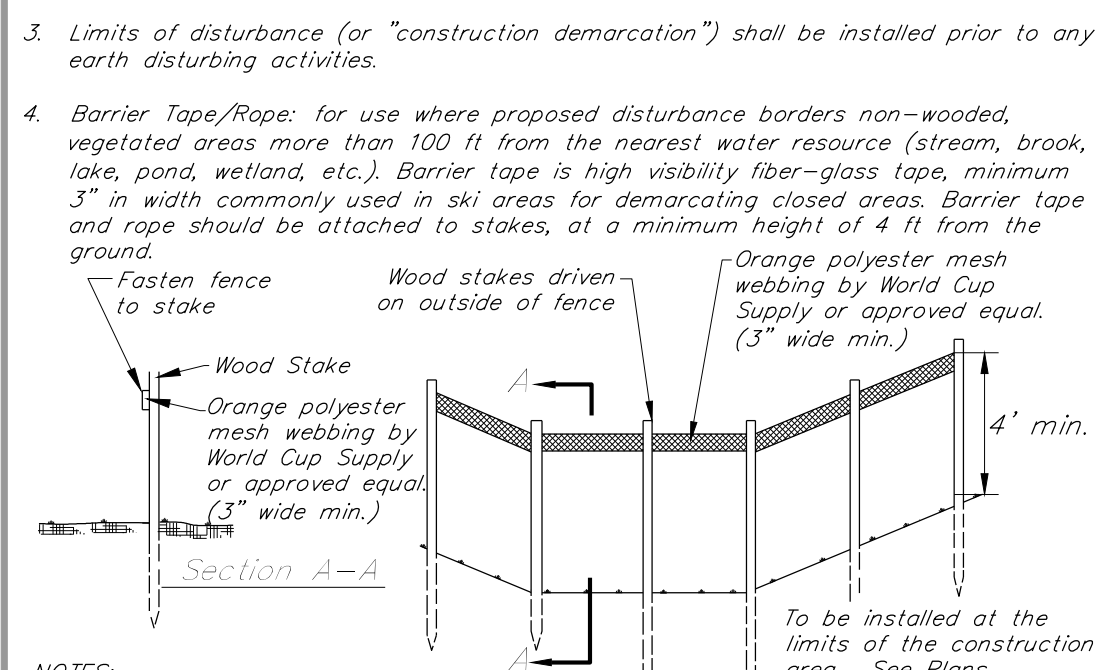
**Silt fence spacing chart**

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

**EPSC GENERAL NOTES**

- 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.
- 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.
- 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 (2019), Vermont Erosion Prevention and Sediment Control Field Guide (2019), and any other relevant project permits.
- All proposed changes shall be approved by the On-Site Plan Coordinator (OSPC) or his/her designee prior to implementation.
- Permission must be granted by VT DEC prior to use of any support activities occurring outside of the approved project boundaries.
- 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).

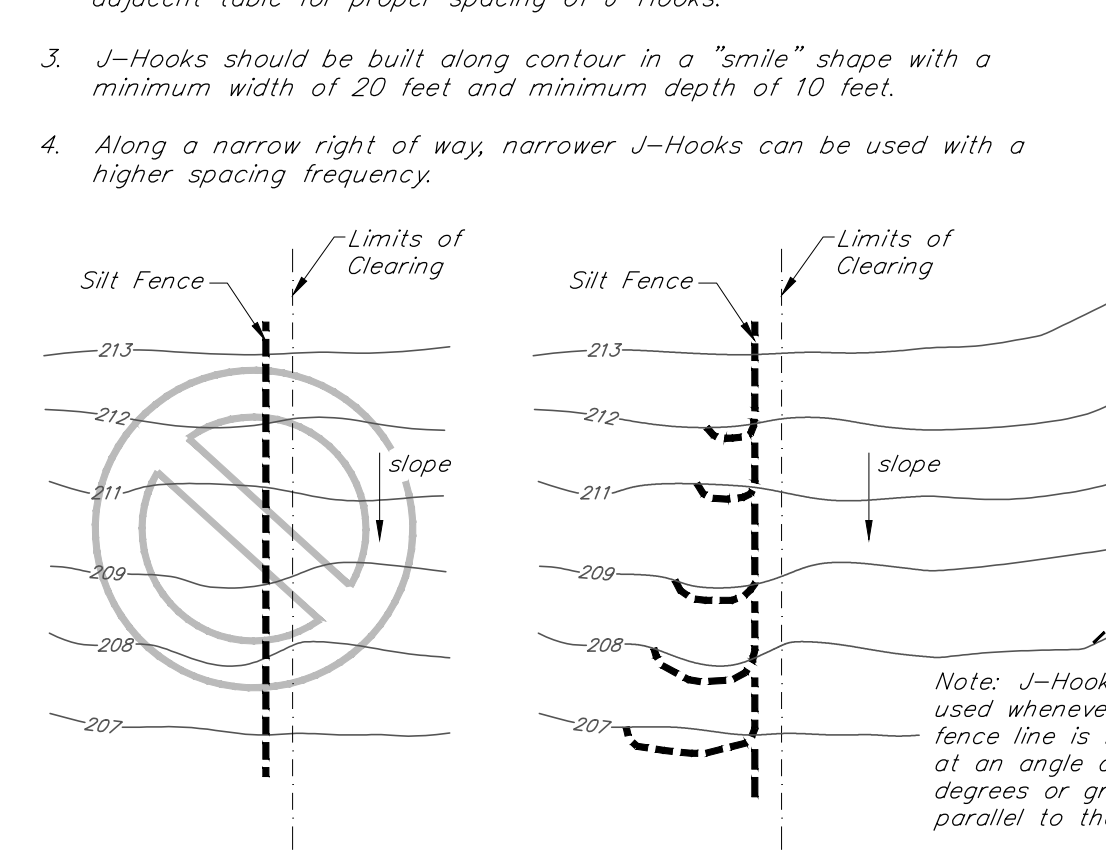
- NOTES:**
- Acceptable EPSC Measure details are provided below.
  - At a minimum, EPSC measures meet VT DEC Standards and Specifications for Erosion Prevention and Sediment Control or previously approved interchangeable practices.
  - Limits of disturbance (or "construction demarcation") shall be installed prior to any earth disturbing activities.
  - Barrier Tape/Rope: 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 rope should be attached to stakes, at a minimum height of 4 ft from the ground.



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

**Typical Construction Limit Barrier**

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



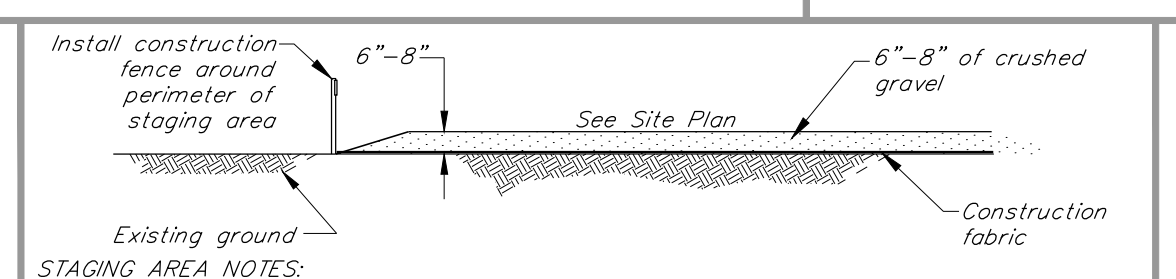
- INCORRECT**  
Silt fence installed parallel to slope (perpendicular to contour) in one, long run
- CORRECT**  
Silt fence installed in shorter runs with J-Hooks to avoid concentration of flows at one location by trapping runoff at multiple points along a slope.

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**

**EPSC CONSTRUCTION NOTES**

- Existing vegetation shall be protected and maintained to the extent practicable.
- A vegetated buffer shall be maintained for water bodies where feasible (e.g., wetlands and streams).
- 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.
- 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.
- 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.
- Concentrated runoff shall not flow down steep slopes unless contained within an adequate temporary or permanent channel (see details), flume, or slope drain structure.
- 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.
- 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% slope  
b. At least 100 feet from any downslope water body or conveyance to a water body, including a ditch  
c. Vegetated
- 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.
- 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 runoff period.
- Dust control shall be handled via water application to roadways and other areas where dust may be generated.



- STAGING AREA NOTES:**
- Install and maintain surface of staging area with construction fabric over existing ground. Cover with 6"-8" of crushed gravel, see detail. Maintain depth of gravel throughout project construction.
  - All activities to staging area will be notified of the project. Due to likely construction noise, activities of staging area and construction site shall abide by local noise ordinances.
  - Staging area is likely to be used for parking during construction, staging of construction materials, base of project operations and miscellaneous project activities.
  - Close to project construction completion, staging area will be removed. Top layer of gravel or sand and construction fabric shall be removed and properly disposed of. Restore the area covered by staging area by seeding, mulching, and erosion control blanket, seeding, etc as necessary.

**Staging Area Plan and Details**

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

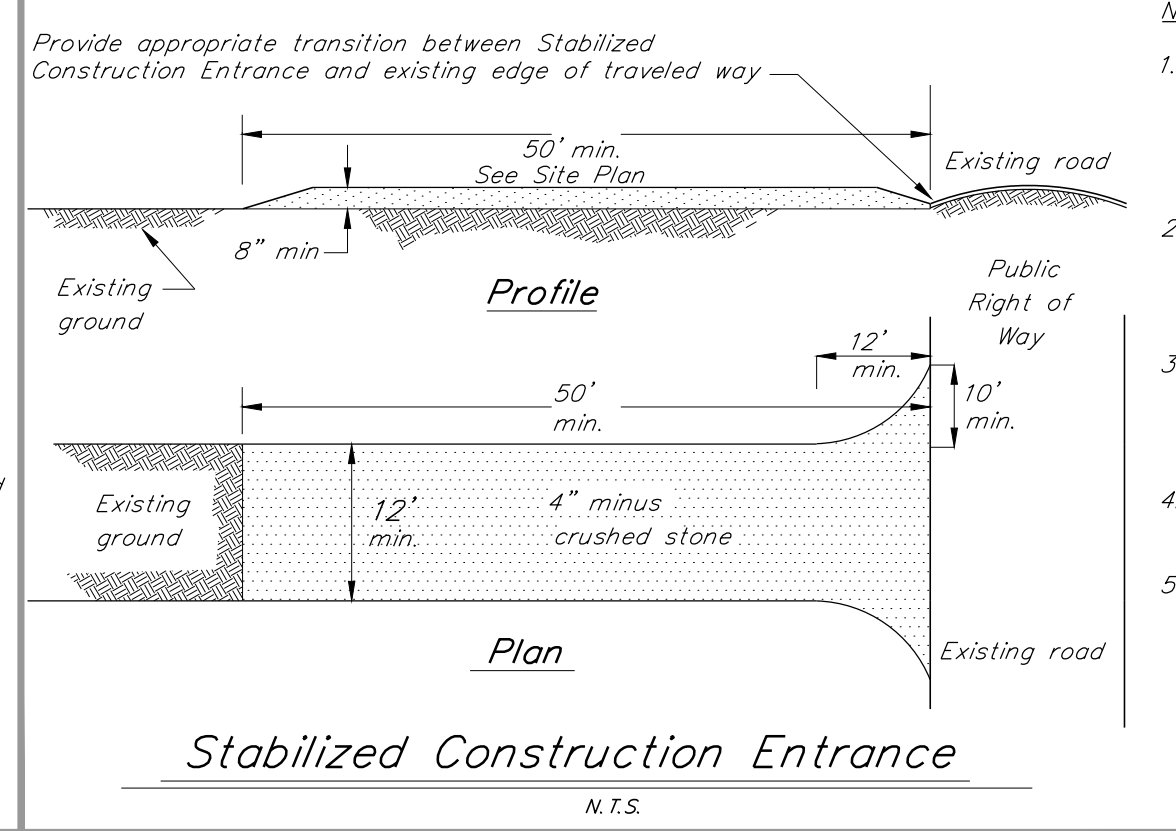
Seed	% Weight
Red Fescue	50%
Sheep Fescue	25%
Red Top	5%
White Clover	10%
Annual Rye	10%

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	3 Min.	90 Min.
Other Crop Grass	0.5 Max.	
Noxious Weed Seed	0.5 Max.	
Inert Matter	1.0 Max.	

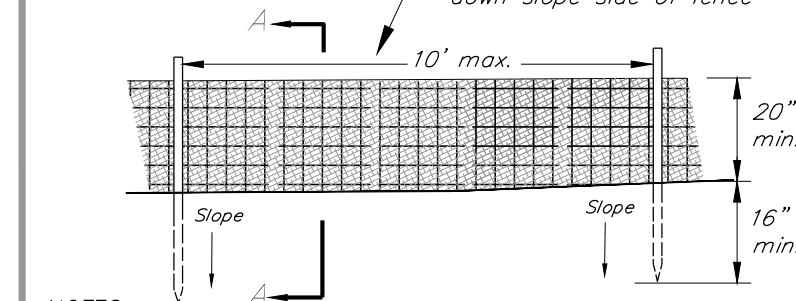
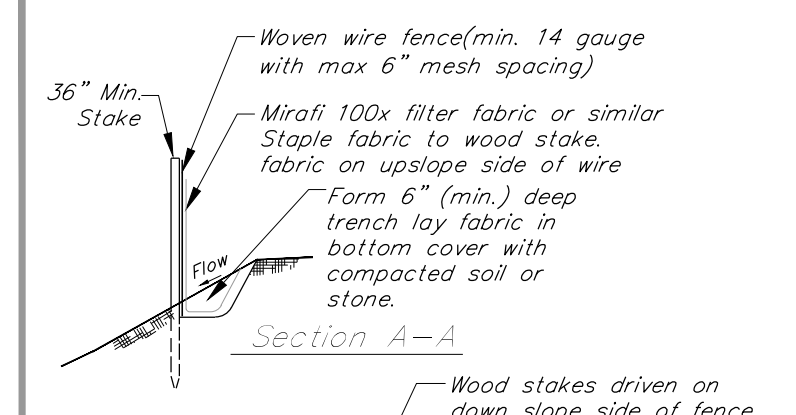
**Seeding Specifications**

- Notes:**
- Contractor shall stabilize construction entrance as required to prevent tracking of sediment off-site.
  - Contractor to use Mirafi 500x under stone for temporary construction roads.
  - Crushed stone shall be added or replaced when 80% of the voids are filled with sediment.
  - Stone size shall be 1-4".
  - 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.



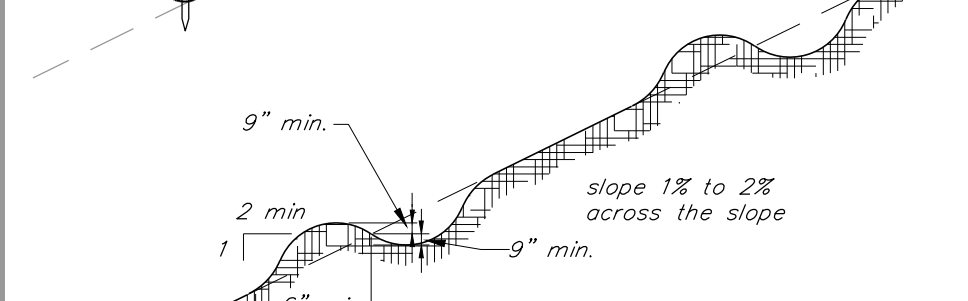
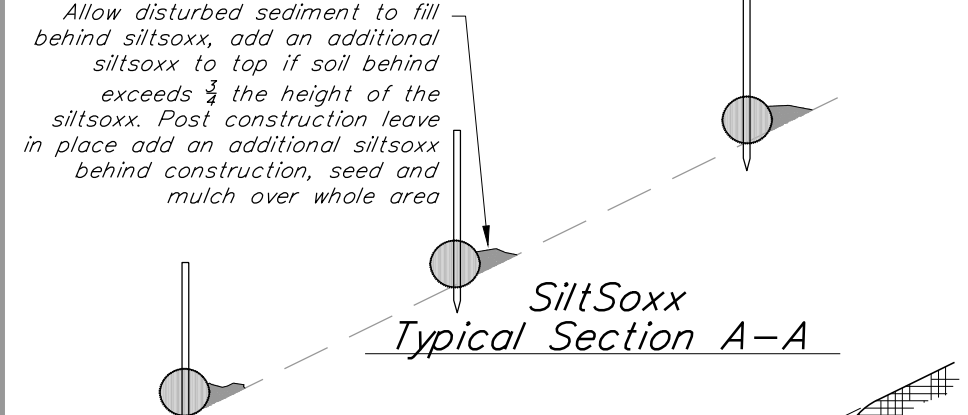
**Guide to Mulch Materials, Rates, and Uses**

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 hydramulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slog	Washed; Size 20 or 34 - 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%)				Composed of shredded bark, stump grindings, composted bark, or acceptable manufactured products. May contain rock < 4" in diameter. Organics shall be fibrous and elongated. No large portions of silts, clays or fine sands. * Slopes 3:1(H:V) or flatter = 2 inch depth plus additional 1/2 inch depth per 20 ft. of slope up to 100 ft. ** Slopes between 3:1(H:V) and 2:1(H:V) = 4 inch depth plus additional 1/2 inch per 20 ft. of slope up to 100 ft. *** Slopes steeper than 2:1(H:V) applicability to specific site and mulch depth to be reviewed and approved prior to use by OSPC or EPSC Specialist



- NOTES:**
- Woven wire fence to be fastened securely to fence posts with wire ties wire fence reinforcement required within 100 ft upslope of receiving waters.
  - Filter cloth to be fastened securely to woven wire fence with ties spaced 24" at the top and mid section.
  - When two sections of filter cloth adjoin each other they shall be overlapped by 6" and folded. Filter cloth shall be Mirafi 100X or approved equivalent.
  - Contractor shall be responsible for the installation, maintenance, and removal of silt fence in all locations shown on the plans.
  - Maintenance shall be performed as needed and material removed when sediment reaches half of fabric height. Remove silt fence after successful establishment of vegetation.
  - If silt fence is installed when ground is frozen, a gravel or sand ballast must be used.
  - Contractor may use IV Wire Back Silt Fence (IV Product 940-3610-848-961) or equivalent.
  - Silt fence shall be installed along contours.
  - Silt fence shall not be located in areas of concentrated flow.
  - Drainage area shall be  $\leq 1$  acre per 100 linear feet of silt fence.

**Typical Temporary Reinforced Silt Fence**

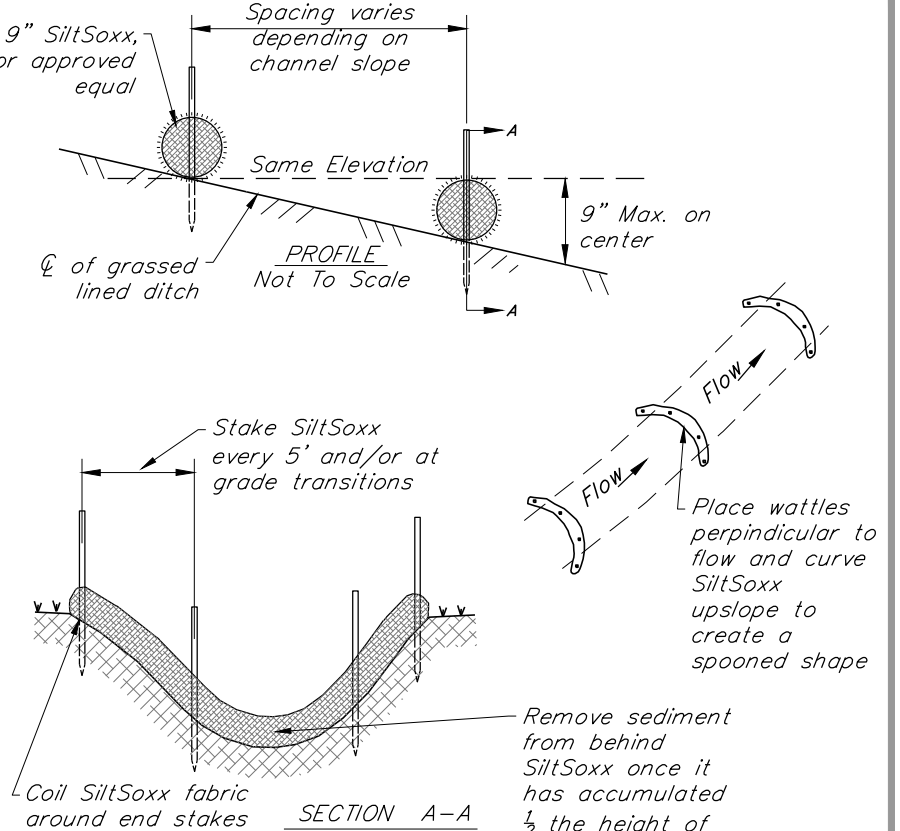
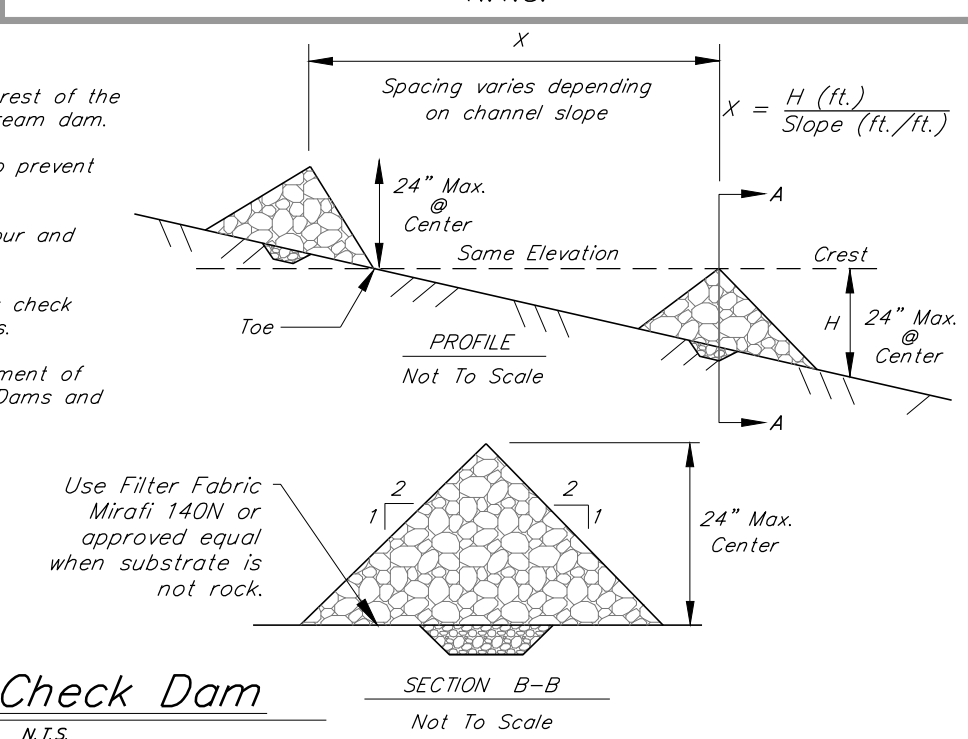


- NOTE:** See locations for water bars on the plans.
- additional haybale checks at outfalls

**Typical Plan**

**CONSTRUCTION SPECIFICATIONS**

- 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.
- Extend the stone a minimum of 1.5 feet beyond the ditch banks to prevent cutting around the dam.
- Protect the channel downstream of the lowest check dam from scour and erosion with stone or erosion control matting as appropriate.
- Ensure that channel appurtenances such as culvert entrances below check dams are not subject to damage or blockage from displaced stones.
- 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.



- NOTE:**
- Contractor shall be responsible for the installation, maintenance, and removal of SiltSoxx in all locations shown on the plans. SiltSoxx may be left in place if the contractor seeds and mulches wattle for growth post construction.
  - Maintenance shall be performed as needed and additional SiltSoxx will be added when sediment reaches half of product height.
  - When installing lengths of SiltSoxx, lengths will overlap by minimum 18" when transitioning to a new length of SiltSoxx.
  - Contractor shall refer to all manufactures specifications and details.
  - SiltSoxx can only be used in a grass lined swale, may not be used in stone lined swales.
  - SiltSoxx check dam can only be used in channels with slopes less than 5%.
  - SiltSoxx is a specific manufacturer, other manufacturers with equal products may be used if approved by Engineer.

**SiltSoxx Check Dam**

**Norwich Turnpike Solar, LLC**

Tumpike Road  
Norwich, Vermont

**NORWICH SOLAR TECHNOLOGIES**

15 RAILROAD ROW  
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**SOURCE DATA LEGEND**

MAPPING SOURCE DATA USED FOR PLAN COMPILATION

Electrical Design:  
Norwich Solar Technologies  
950 Bert White Rd.  
White River Junction, Vermont 05001

Civil Engineering:  
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164 Main Street, Suite 201  
Colchester, Vermont 05446

Environmental:  
Arrowood Environmental  
1500 Main Street  
Huntington, Vermont 05462

**Proposed Solar Array**

REV	REVISIONS/COMMENTS	DATE

Drawing Title:

**EROSION PREVENTION AND SEDIMENT CONTROL DETAILS**

DATE of Issue: 5/20/2020  
Drawn by: JBC  
Checked by: GID  
Project No.: 20158  
Scale: NTS  
Drawing No.:  
Rev No.:

**C-102**